

An ecogeographical study of

Vicia

subgenus *Vicia*

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Nigel Maxted



International Plant Genetic Resources Institute
IPGRI

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Vicia hyaeniscyamus by Sarah Oldfield

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SUMMARY

An ecogeographic study of *Vicia* subgenus *Vicia* is presented. This group contains the cultivated vetches and their wild relatives. The subgenus contains nine sections, nine series, 38 species and 36 sub-specific taxa. Ecogeographic data were recorded for each taxon throughout the geographical range of the subgenus. Representative herbarium specimens held in 18 major international herbaria were selected and these data were entered directly into an ecogeographic database. The herbarium specimen passport data were supplemented by observing the taxa during field trips.

The ecogeographic database, constructed using dBASE IV, contained information on the phytogeography, ecology and taxonomy of subgenus *Vicia*. These data are summarised in the ecogeographic conspectus. It includes data concerning accepted names of taxa, author(s), date of publication, where published; reference to full description and iconography; botanical illustrations; sectional descriptions; phenology; chromosome number; geographical distribution; distribution maps; ecological details, including altitude, soil and habitat preferences; interpretative notes on subgenus *Vicia* phytogeography, ecology and taxonomy.

The discussion focuses on previous and present ecogeographic studies, then draws generalised conclusions about the ecogeography of the subgenus. Future collection and conservation priorities are discussed and specific targets for *ex situ* and *in situ* are identified.

1. INTRODUCTION

1.1 General background

A revision of *Vicia* L. subgenus *Vicia* (Leguminosae, Viciaeae) was recently completed by Maxted (1991a, 1993a). This involved the preparation of a revised database of systematic and more general information for the subgenus worldwide, from which the revised conspectus was synthesized. This conspectus contained detailed ecogeographical as well as systematic information. The ecogeographic element of the database and the conspectus form the basis of this study.

Vicia subgenus *Vicia* contains several economically important food and forage legume species which have a centre of distribution in the Eastern Mediterranean. Notably, subgenus *Vicia* contains the extensively cultivated fababean (broad bean), *Vicia faba* L., and the minor forages, *V. narbonensis* (narbon vetch) and *V. sativa* L. subsp. *sativa* (common vetch). The subgenus also contains taxa that have a high potential as forages of the future: *V. hyaeniscyamus* Mout., *V. noeana* (Reuter in Boiss.) Boiss. and *V. sativa* subsp. *amphicarpa* (L.) Batt. (Maxted *et al.* 1990).

Due to their current economic value and potential for future utilisation, *Vicia* was ascribed a high priority by the IBPGR forage working group for collection, conservation and forage development (IBPGR 1985a). To facilitate the conservation of high-priority groups, it was decided to commission a series of ecogeographic surveys of herbarium collections (IBPGR 1988). *Vicia* was included as a priority group that would benefit from an ecogeographic study.

Practically, the study necessitated the loan and observation of a large number of herbarium specimens, representing the taxa of *Vicia* subgenus *Vicia*, from international herbaria to the University of Southampton, where the study was based. However, this material did not fully represent the distribution of *Vicia* subgenus *Vicia* species within the Soviet Union. Soviet specimens have rarely been incorporated into Western herbaria. The centre of diversity and possibly origin for subgenus *Vicia* is the northeastern Mediterranean. This area includes Syria, Turkey, Iraq, Iran and the southwest republics of the former Soviet Union. Material from the first four countries is well represented in international herbaria and specimens from these herbaria were loaned to Southampton. The lack of Soviet material in Western herbaria necessitated the collection and survey of *Vicia* material in the former Soviet Union. Three collecting missions were undertaken in the former Soviet Union (Caucasus in 1989, and Central Asia in 1990 and 1991), as well as three survey missions to Crimean, Caucasian and Central Asian herbaria. Data gathered from both the visits to herbaria and the collecting missions (Auricht *et*

al. 1988; Maxted 1988, 1989a, 1990, 1991b; Maxted & Bisby 1986, 1987; Maxted & Sperling 1991; Maxted *et al.* 1989a) are incorporated into the ecogeographic database and conspectus.

1.2 Taxonomy of *Vicia* subgenus *Vicia*

1.2.1 Taxonomic History

The taxonomic history of subgenus *Vicia* is extensive, 20 major classifications of the group having been produced since the work of Linnaeus (Maxted 1991a). The overall similarity between these classifications of subgenus *Vicia* should be emphasized, though the position of some species has always been controversial. Certain species groupings are met with throughout the taxonomic history of the genus, e.g. the close linking of *V. sativa*, *V. barbazitae* Ten. & Guss., *V. pyrenaica* Pourret, *V. qatmensis* Gomb. and *V. grandiflora* Scop. (sect. *Vicia sensu*, Maxted 1993a), which may be taken to indicate a natural grouping. Specifically, the 'Faba' group is a less cohesive unit than *Vicia* and as a result 'Faba' has had a more disputed history. Opinions about the placement of *V. faba* have been particularly erratic, some authors believing it should be regarded as a separate genus (Seringe 1825; Alefeld 1861b; Stankevich 1970, 1978a, 1982), a separate subgenus (Fedtschenko 1948; Bueno Perez 1979), a separate section (Ascherson & Graebner 1909; Ball 1968; Chrtkova-Zertova 1979), a separate subsection (Koch 1836; Godron 1849; Taubert 1894; Radzhi 1971), a separate subseries (Plitmann 1967) or on a level with certain other *Vicia* species (Linnaeus 1753; Visiani 1842; Kupicha 1976).

It is perhaps not surprising that a crop plant like *V. faba*, without any obvious close progenitor, should have such a chequered taxonomic history, but another species in the 'Faba' group, *V. bithynica* L., has also proved problematic to place. Most commonly it is allied with the other 'Faba' group species but it was originally placed in *Lathyrus* by Linnaeus (1753) and was placed with the *Cracca* group (by Visiani 1842 and Boissier 1872) due to its extended peduncle. The taxonomic background of *V. narbonensis* has not proved so problematic, for when not linked to *V. faba* and *V. bithynica*, it has been allied to the perennial species of sect. *Atossa sensu* Kupicha (1976).

Within the 'Vicia' group of species, Kupicha (1976) places the perennial species (except for *V. pyrenaica*, the close ally of *V. sativa*) in one section, *Atossa* (Alef.) Asch. & Graebner. Boissier (1872) originally grouped these four species by placing them in one subsection. Similarly, other authors link two or three of these species, but as few authors include all four species in their classification, it is difficult to judge the naturalness of their relationship.

Another subgroup often linked within the 'Vicia' group is composed of *V. peregrina*, *V. aintabensis*, and *V. michauxii*. These three species are the only ones

to lack a peduncle and are obviously closely related. This led Ponert (1973) to regard the latter two taxa as subspecies of *V. peregrina*. Kupicha, like Boissier (1872) and Bouloumoy (1930), links *V. mollis* with these species in sect. *Peregrinae* Kupicha, but more recently this species has only occasionally been allied to the *V. peregrina* complex. *V. mollis* has been linked to sect. *Hypechusa* (Alef.) Asch. & Graebner, specifically to *V. sericocarpa* (Plitmann 1967), *V. assyriaca* Chrtkova-Zertova (1979) and *V. anatolica* (Maxted 1993c).

The remaining species of the "Vicia" grouping come from the cohesive sect. *Hypechusa sensu* (Maxted 1993a). The taxonomic history shows that the species cluster together rather than form links with other sections. However, rather than the whole of the section being commonly united, subgroups of species are more commonly seen, e.g. *V. hybrida*, *V. pannonica* and *V. anatolica* or *V. hyrcanica*, *V. galeata* and *V. noeana*. There is a particular problem in trying to interpret the history of this section as most of the species included are relatively rare and of restricted distribution.

1.2.2 Delimitation of the taxon

The vetches and peas are included in the legume tribe Viciae, which has historically included numerous genera with relatively small numbers of species in each, but in recent years the number of genera has decreased and the number of species per genus has increased. The generic classification of the Viciae has now stabilized into a generally accepted grouping of five genera (Kupicha 1981): *Vicia* L., *Lathyrus* L., *Lens* Mill., *Pisum* L. and *Vavilovia* A. Fedorov.

Kupicha (1981) considers *Vicia* L. (Leguminosae, Viciae) to comprise approximately 140 species, chiefly located in Europe, Asia and North America, extending to temperate South America and tropical East Africa. The genus is, however, primarily distributed through the Mediterranean and Irano-Turanian regions. Allkin *et al.* (1986) have increased the estimated number of accepted species to 166, which possibly errs on the conservative side. Kupicha (1976) provides the following description for the genus:

Vicia L., Sp. Pl. 734 (1753).

"Perennial and annual herbs with erect or more usually climbing or sprawling habit; plants never tuberous. *Stems* angled but not winged, usually with complete replacement of cortical vascular bundles at the nodes, occasionally with partial replacement. *Leaves* hypostomatic to epistomatic, paripinnate and tendrillous or mucronate or very rarely imparipinnate, usually with several to many pairs of leaflets, very rarely unijugate; stipules semisagittate or simple, sometimes toothed or lacinate, occasionally dimorphic, sometimes with a nectary on

abaxial side; vernation of leaflets conduplicate (supervolute in *V. biennis*); venation pinnate, brochidodrome. *Inflorescence* racemose, 1 - many-flowered, occasionally branched. *Calyx* usually with oblique mouth and teeth of unequal length ('irregular'), sometimes actinomorphic ('regular'). *Vexillum* oblong, stenonychioid or platonychioid, very rarely bossed or pouched at the fold, rarely pubescent on inner-face. *Alae* usually with 'pleat' in upper edge of limb. *Staminal tube* oblique at apex. *Style* linear, not contorted, dorsally or laterally compressed or occasionally terete, always hairy; distribution of pubescence various but style never hairy on adaxial side only (except in some specimens of *V. ervilia*). *Legume* compressed or occasionally sub-torulose, often stipitate, sometimes hairy but hairs rarely tuberculate; pod sometimes occasionally 'woolly' parenchymatous tissue between the seeds. *Seeds* with short to long hilum; testa smooth or very rarely rough; lens near hilum or occasionally on opposite side of seed; free amino acid canavanine sometimes present."

Kupicha (1976) comments that historically *Vicia* species have been grouped into three or four major species clusters: 'Cracca', 'Vicia', 'Ervum' and sometimes 'Faba'. Kupicha (1974, 1976) argues convincingly that this division of the species is artificial. She believes that correlated characters divide the species into two natural subgenera, *Vicia* and *Vicilla* (Schur) Rouy. Using her circumscription, the number of species in subgenus *Vicia* is smaller and more internally coherent than subgenus *Vicilla*. The former is therefore easier to circumscribe. Her two subgenera can be distinguished using the following characters:

Character	Subgenus <i>Vicilla</i>	Subgenus <i>Vicia</i>
Stipule nectary	absent	present on abaxial stipule face
Peduncle length	= or > leaf	< leaf or absent
Style type	terete, dorsally compressed, pubescent or tufted, laterally compressed	dorsally compressed, tufted
Keel shape	edge curved round and above style	apical part encircled style and anthers
Legume	stipitate, subtorulose	never stipitate
Canavanine	present	absent

The characters she used to distinguish her groupings are those used throughout the taxonomic history of *Vicia*. The 'Vicia' and 'Faba' groups are contained in her subgenus *Vicia*. It is now generally accepted that the subgenus is a distinctive, natural grouping (Tzvelev 1980; Hanelt & Mettin 1989; Maxted 1991a), although there is still some debate over the appropriate rank for *Vicia faba* itself (Maxted *et al.* 1991; Maxted 1991a, 1993a). In her conspectus, Kupicha (1976) provided brief descriptions and circumscriptions for the five sections of subgenus *Vicia* she recognized (see Table 1.1).

Table 1.1. Descriptions and circumscriptions for the sections of subgenus *Vicia* (Kupicha 1976)

Section 18. *Atossa* (Alef.) Aschers. & Graebner

(Perennial; calyx mouth oblique; inflorescence several-flowered, standard oblong; suture of legume not parallel; lens of seed close to hilum)

V. oroboides Wulfen
V. balansae Boiss.

V. sepium L.
V. truncatula Fisch. ex Bieb.

Section 19. *Vicia*

(Leaves usually with more than three pairs of leaflets [if fewer, then leaflets less than 1 cm long], lateral veins of leaflets prominent and straight; calyx mouth sub-truncate; sutures of legume parallel)

V. pyrenaica Pourret
V. grandiflora Scop.
V. lathyroides L.

V. sativa L. agg.
V. barbazitae Ten. & Guss.
V. cuspidata Boiss.

Section 20. *Faba* (Miller) Ledeb.

(Leaves with 1-3 pairs of leaflets which are more than 2 cm long, lateral veins of leaflets not prominent, curved toward apex; calyx sub-truncate, sutures of legume parallel)

V. faba L.
V. galilaea Plitm. & Zoh.
V. johannis Tamamschjan

V. narbonensis L.
V. hyaeniscyamus Mouterde
V. bithynica L.

Section 21. *Hypechusa* (Alef.) Aschers. & Graebner

(Annual; Calyx mouth oblique; inflorescence 1-many-flowered, standard oblong or stenonychioid [i.e. limb wider than the claw]; suture of legume not parallel; lens of seed opposite hilum)

V. anatolica Turill
V. ciliatula Lipsky
V. galeata Boiss.
V. hyrcanica Fischer & Meyer
V. melanops Sibth. & Smith
V. pannonica Crantz

V. assyriaca Boiss.
V. esdraelonensis O. Warb.
V. hybrida L.
V. lutea L.
V. noeana Reuter ex Boiss.
V. sericocarpa Fenzl

Section 22. *Peregrinae* Kupicha

(Calyx mouth oblique; inflorescence 1-2-flowered, standard stenonychioid, flowers purplish; suture of legume not parallel; lens of seed close to hilum)

V. aintabensis Boiss. & Hausskn.

V. mollis Boiss. & Hausskn. ex Boiss.

V. michauxii Sprengel

V. peregrina L.

1.2.3 Classification of *Vicia* subgenus *Vicia*

The *Vicia* classification historically most generally used is that produced by Kupicha (1976), but this is a broad classification and she comments that it requires further refinement. Specifically, the set of species she circumscribed is incomplete, some 'good' species that are endemic to Syria are not included and strict use of her diagnosis for the subgenus would exclude *V. bithynica* and *V. sativa* subsp. *devia* J.G. Costa. The latter taxa have peduncles longer than the subtending leaf, which would place them in subgenus *Vicilla*, but they are linked by the presence of a nectary on the stipule and other characteristics to subgenus *Vicia*.

Acting on Kupicha's comments, Maxted (1991a) commenced the process of taxonomic refinement by publishing a revision of *Vicia* subgenus *Vicia*. Maxted (1993a) presents a revised classification of the subgenus that can be read as a development of Kupicha's concept and is an attempt at a better approximation of the abstract 'natural' classification of the group than previous classifications.

Maxted's classification of subgenus *Vicia* contains nine sections, nine series, 38 species, 14 subspecies and 22 varieties (see Table 1.2). Interestingly, the sections *sensu* (Kupicha 1976), that are split into further sections and series are those she suggests require refinement: *Atossa*, *Vicia*, *Faba* and *Hypechusa*. The latter three sections each contain groups of closely related forms (e.g. the *V. sativa* agg., the *V. narbonensis* complex and the *V. noeana* complex), which suggests that they are currently undergoing a process of rapid speciation. The classification ordered the sections from the perennial species of sect. *Atossa*, through the few flowered, adventitious weeds of sect. *Hypechusa*, *Peregrinae* and *Vicia*, to the more robust, crop-like forms of the *V. narbonensis* complex and culminates in *V. faba*. Sectional revisions of *Peregrinae* Kupicha and *Atossa* series *Truncatulae* (B. Fedtsch. ex Radzhi) Maxted have recently been published by Maxted (1993c, 1993d).

1.2.4 Key to *Vicia* subgenus *Vicia* sections, series and speciesKey to *Vicia* subgenus *Vicia* sections and series

- 1(0). Calyx mouth truncate 2
 Calyx mouth oblique 6
- 2(1). Keel slightly shorter or approximately equal to wings; lens positioned near hilum 3
 Keel markedly shorter than wings; lens positioned opposite hilum Sect. *Microcarinae*
- 3(2). Testa surface smooth 4
 Testa surface sculptured (with uneven surface) Sect. *Wiggersia*
- 4(3). Legume hairs simple Sect. *Vicia* 5
 Legume hairs tuberculate (with basal swelling) ... Sect. *Bithynicae*
- 5(4). Hilum less than half of seed circumference Ser. *Vicia*
 Hilum over half seed circumference Ser. *Grandiflorae*
- 6(1). Lens positioned opposite hilum Sect. *Hypechusa* 7
 Lens positioned near hilum 8
- 7(6). Peduncle possibly longer than 6 mm; standard stenonychioid (limb broader than claw), upper surface glabrous (without hairs); wing marking absent; wing limb with distinct fold Ser. *Hyrceanicae*
 Peduncle not longer than 6 mm; standard platynychioid (limb equal width to claw) or stenonychioid; upper standard surface glabrous or pubescent; wing marking absent or present; wing limb with weak fold Ser. *Hypechusa*
- 8(6). Perennial; hilum over half seed circumference; legume glabrous ..
 Sect. *Atossa* 9
 Annual; hilum less than quarter of seed circumference; legume pubescent 11
- 9(8). Leaves with 1-4 pairs of leaflets Ser. *Pseudovicilla*
 Leaves with more than 4 pairs of leaflets 10
- 10(9). Standard yellow; legume hairs absent Ser. *Truncatulae*
 Standard blue or purple; legume hairs present Ser. *Atossa*
- 11(8). Leaf rachis ending in a tendril 12
 Leaf rachis ending in a mucro (much shorter than a tendril)
 Sect. *Faba*
- 12(11). Peduncle absent; standard claw bowed; leaflets symmetric about midrib; stem slender; calyx base gibbous Sect. *Peregrinae*
 Peduncle present; standard claw bowing absent; leaflets asymmetric about midrib; stem stout; calyx base not gibbous
 Sect. *Narbonensis* 13
- 13(12). Legume rectangular Ser. *Narbonensis*
 Legume rhomboid Ser. *Rhombocarpae*

Key to *Vicia* subgenus *Vicia* species

- 1(0) Peduncle absent; legume oblong 2
 Peduncle present; legume linear, rectangular, rhomboid 4
- 2(1) Standard face cream; no teeth on stipule proximal edge; seed circumference to hilum length ratio up to 0.1 3
 Standard face purple; 1-2 teeth on stipule proximal edge; seed circumference to hilum length ratio 0.11 to 0.3 22 *V. peregrina*
- 3(2) Legume cross-sectional shape rounded to flat; seed circumference 9 to 20 mm; seed shape spherical to cubic 21 *V. aintabensis*
 Legume cross-sectional shape flat; seed circumference 21 to 30 mm; seed shape oblong 20 *V. michauxii*
- 4(1) Calyx mouth truncate 5
 Calyx mouth oblique 12
- 5(4) Keel slightly shorter or approximately equal to wings; lens positioned near hilum 6
 Keel markedly shorter than wings; lens positioned opposite hilum 5 *V. dionysiensis*
- 6(5) Annual, stolons absent; standard cream, yellow, or purple 7
 Perennial, stoloniferous; standard purple 25 *V. pyrenaica*
- 7(6) Stipules sub-entire, 2-4 mm long; flowers 6-14mm; seeds sculptured (test surface with protrusions); tendrils mostly simple 8
 At least the lower stipules distinctly toothed, usually larger; flowers (10-)14-36 mm; seeds smooth; tendrils simple or branched 9
- 8(7) Flowers 5-12 mm; legume falcate (curved); legume distal end strongly beaked; seed surface ruminant-reticulate .. 23 *V. cuspidata*
 Flowers 9-15 mm; legume not falcate; legume distal end slightly beaked; seed surface tuberculate 24 *V. lathyroides*
- 9(7) Wings purple; legume rounded in cross-section; seed circumference to hilum length ratio 0.11 to 0.3 10
 Wings cream or yellow; Legume distinctly laterally flattened in cross-section; Seed circumference to hilum length ratio of 0.61 or more 11
- 10(9) Standard face purple (rarely cream); wings reddish purple (rarely cream) 26 *V. sativa*
 Standard face yellow; wings blueish purple 27 *V. barbazitae*
- 11(9) Aril present and protruding (membranous attachment to hilum); flower (19-)24-36 mm; wings yellow 29 *V. grandiflora*
 Aril absent; flower 20-21 mm; wings cream 28 *V. qatmensis*
- 12(4) Leaves with 1-3(-4)-pairs leaflets, large and usually asymmetric about midrib; legume sutures parallel; seeds with short hilum, lens near hilum 13

- Leaves with 3-8-paired leaflets, smaller and symmetric; legume sutures not parallel; seeds with medium or short hilum, lens on opposite side of seed to the hilum 21
- 13(12) Leaf rachis ending in a mucro (much reduced tendril); calyx glabrous (without hairs); flower white; legume hairs simple
..... 38 *V. faba*
- Leaf rachis ending in a tendril; calyx pubescent (with hairs); flower cream, lilac or purple; legume hairs tuberculate (with swollen base)
..... 14
- 14(13) Stipules ovate-semi-sagittate; leaflets narrowly ovate to linear; calyx teeth subequal; peduncle commonly longer than calyx
..... 30 *V. bithynica*
- Stipules orbicular-semi-sagittate; leaflets broadly ovate or obovate; calyx teeth unequal; peduncle rarely longer than calyx 15
- 15(14) Standard face cream, possibly tinged with purple; wing apex with distinct markings 16
- Standard face purple, lilac or rarely cream; wing apex markings absent or, if standard purple and leaflet distinctly toothed, possibly present 18
- 16(15) Erect, robust plant; stipules purple; 5-6 flowers per inflorescence; flower cream yellow; legumes with numerous long hairs
..... 37 *V. hyaeniscyamus*
- Ascending semi-robust plant; stipules green; 1-3 flowers per inflorescence; flower cream; legume with few short hairs 17
- 17(16) Exterior calyx teeth nectaries dark purple; less than 7 basal side shoots 34 *V. galilaea*
- Exterior calyx teeth nectaries green; more than 7 basal side shoots
..... 33 *V. johannis*
- 18(15) Standard face cream or pale lilac 19
- Standard face purple 20
- 19(18) Standard face lilac; legume rhomboid, hairs with long tubercles (base swollen) 31 *V. eristalioides*
- Standard face cream; legume rectangular, hairs with short tubercles
..... 32 *V. kalakhensis*
- 20(18) Leaflet margin (edge) with more than 6 serrations; wing apex markings present; 6-10 seeded; seeds 4-5(-6)mm 35 *V. serratifolia*
- Leaflet margin with less than 7 serrations; wing apex markings absent; 4-7 seeded; seeds 4-10(-13)mm 36 *V. narbonensis*
- 21(12) Annual; leaf rachis ending in a tendril; standard shape stenonychioid (limb broader than claw) or platynychioid (limb same

- width as claw); hilum less than half seed circumference; lens positioned opposite hilum 22
- Perennial; leaf rachis ending in a tendril or mucro; standard shape platynychioid; hilum over half seed circumference; lens positioned near hilum 35
- 22(21) Standard upper surface sub-adpressed pubescent; legume pubescent 23
- Standard upper surface glabrous (without hairs); legume glabrous or pubescent 25
- 23(22) Inflorescence with 2-4-flowers; flowers 15-23 mm, yellow or purple 16 *V. pannonica*
- Inflorescence with 1(-2)-flowers; flowers 12-35 mm, yellow 24
- 24(23) Flowers 18-35 mm, flowers sulphur yellow; standard stenonychioid, limb equalling claw 17 *V. hybrida*
- Flowers 15-18 mm, standard yellow green, wing with dark brown apex; standard platynychioid, limb shorter than claw 14 *V. anatolica*
- 25(22) Flowers violet 7 *V. esdraelonensis*
- Flowers yellowish (or rarely purple in *V. lutea*) 26
- 26(25) Legume (and ovary) with hairy valves (sides); peduncle much shorter than calyx tube 27
- Legume (and ovary) with glabrous valves; peduncle equalling or longer than calyx tube 29
- 27(26) Peduncle 1-2 mm; standard stenonychioid; legume with simple or tubercular hairs 19 *V. lutea*
- Peduncle more than 2 mm; standard platynychioid; legume with simple hairs 28
- 28(27) Plant +/- villous; tendrils simple; flowers 12-18 mm, 1-3 in axil; wing apex marking present; fruit densely villous 15 *V. mollis*
- Plants adpressed-pilose; tendrils mostly branched; flowers (15)18-29 mm, mostly solitary; wing apex marking absent; fruit adpressed-sericeous 18 *V. sericocarpa*
- 29(26) Sutures (valve joint) of legume tuberculate-short haired; limb of standard shorter than claw 30
- Sutures of legume glabrous; limb of standard shorter to longer than claw 31
- 30(31) Wing apex with distinct brown spot; peduncle 2-9 mm; flowers (1-)2-4, 17-22 mm 12 *V. melanops*
- Wing apex with no apex spot; peduncle 2-3 mm; flowers 1-2 per inflorescence, 12-15 mm long 13 *V. ciliatula*

- 31(29) Stem 10-35 cm; tendrils rarely branched; lower calyx tooth 2-35 mm; standard 15-20 mm, pale yellow 6 *V. assyriaca*
 Stem taller; tendrils branched; lower calyx tooth 2-9 mm; standard 17-30 mm, yellow-pink or yellow-brown 32
- 32(31) Peduncle 1-3 mm; corolla not concolorous (petals not the same colour); legume rhomboid 8 *V. tigridis*
 Peduncle longer than 3 mm; corolla concolorous; legume oblong. 33
- 33(32) Peduncle 1-2-flowered; legume 8-12 mm broad; limb of standard slightly shorter than claw 10 *V. hyrcanica*
 Peduncle (1-)2-5-flowered; legume 8-10 mm broad; limb of standard as long or slightly longer than claw 34
- 34(33) Hilum 1/6 of seed's circumference; calyx slightly violet, green only if lowest tooth longer than tube; leaflets 2-5(-8) mm broad, never obovate 9 *V. galeata*
 Hilum 1/2 to 2/3 of seed's circumference; calyx green, teeth shorter than tube; leaflets 3-14 mm broad, some obovate 11 *V. noeana*
- 35(21) Leaf rachis ending in a mucro 36
 Leaf rachis ending in a tendril 37
- 36(35) Stem slender; leaves with 1-4 leaflet pairs; calyx teeth not reflexed (twisted back); legume rounded to flat in cross-section 3 *V. abbreviata*
 Stem stout; leaves with 4-7 leaflet pairs; calyx teeth reflexed at maturity; legume laterally flat in cross-sectional 1 *V. oroboides*
- 37(35) Stem stout; flower yellow; legume valve hairs absent 2 *V. balansae*
 Stem slender; flower lilac; legume valve hairs scarce, but present 4 *V. sepium*

Table 1.2. Classification of *Vicia* L. subgenus *Vicia*, taken from Maxted (1993a)

Section	Series	Species	Infra-specific taxon	
I	<i>Atossa</i> (Alef.) Asch. & Graebner	A <i>Pseudovicilla</i> Maxted	1 <i>V. oroboides</i> Wulfen in Jacq.	
			B <i>Truncatulae</i> (B. Fedtsch. ex Radzhi) Maxted	
	C <i>Atossa</i>		2 <i>V. balansae</i> Boiss.	
			3 <i>V. abbreviata</i> Fischer ex Sprengel	
			4 <i>V. sepium</i> L.	
				i var. <i>sepium</i>
				ii var. <i>ericalyx</i> Celak.
				iii var. <i>montana</i> Koch
	II	<i>Microcarinae</i> Maxted	5 <i>V. dionysiensis</i> Mout.	
	III	<i>Hypechusa</i> (Alef.) Asch. & Graebner	A <i>Hyrchanicae</i> B. Fedtsch. ex Radzhi	6 <i>V. assyriaca</i> Boiss.
7 <i>V. esdraelonensis</i> Warb. & Eig				
			8 <i>V. tigridis</i> Mout.	
			9 <i>V. galeata</i> Boiss.	
			10 <i>V. hyrcanica</i> Fischer & C. Meyer	
			11 <i>V. noeana</i> (Reuter in Boiss.) Boiss.	
			i subsp. <i>megalodonta</i> Rech. fil.	
			ii subsp. <i>noeana</i>	
		B <i>Hypechusa</i>	12 <i>V. melanops</i> Sibth. & Smith	
			i var. <i>melanops</i>	
			ii var. <i>loiseaui</i> Alleiz.	
			13 <i>V. ciliatula</i> Lipsky	
			14 <i>V. anatolica</i> Turrill	
			15 <i>V. mollis</i> Boiss. & Hausskn. ex Boiss.	
			16 <i>V. pannonica</i> Crantz	
			i subsp. <i>striata</i> (M. Bieb.) Nyman	
			ii subsp. <i>pannonica</i>	
			17 <i>V. hybrida</i> L.	
			18 <i>V. sericocarpa</i> Fenzl	
		19 <i>V. lutea</i> L.		
		i subsp. <i>lutea</i>		
		ii subsp. <i>vestita</i> (Boiss.) Rouy		
IV	<i>Peregrinae</i> Kupicka	20 <i>V. michauxii</i> Sprengel		
		21 <i>V. aintabensis</i> Boiss. & Hausskn. ex Boiss.		
		22 <i>V. peregrina</i> L.		
V	<i>Wiggersia</i> (Alef.) Maxted	23 <i>V. cuspidata</i> Boiss.		
		24 <i>V. lathyroides</i> L.		
VI	<i>Vicia</i>	A <i>Vicia</i>	25 <i>V. pyrenaica</i> Pourret	
			26 <i>V. sativa</i> L.	
			i subsp. <i>nigra</i> (L.) Ehrh.	
		ii subsp. <i>amphicarpa</i> (L.) Batt.		

Table 1.2. Continued

Section	Series	Species	Infra-specific taxon
			iii subsp. <i>incisa</i> (M. Bieb.) Arcang.
			iv subsp. <i>devia</i> J.G. Costa
			v subsp. <i>sativa</i>
			vi subsp. <i>macrocarpa</i> (Moris) Arcang.
		27	<i>V. barbazitae</i> Ten. & Guss.
			i var. <i>barbazitae</i>
			ii var. <i>incisa</i> (Orph.) Boiss.
B	<i>Grandiflorae</i> B. Fedtsch. ex Radzhi	28	<i>V. qatmensis</i> Gomb.
		29	<i>V. grandiflora</i> Scop.
			i var. <i>grandiflora</i>
			ii var. <i>incisa</i> Braun & Bouche
VII	<i>Bithynicae</i> (B. Fedtsch. ex Radzhi) Maxted	30	<i>V. bithynica</i> (L.) L.
VIII	<i>Narbonensis</i> (B. Fedtsch. ex Radzhi) Maxted		
	A <i>Rhombocarpae</i> Maxted	31	<i>V. eristalioides</i> Maxted
	B <i>Narbonensis</i> (B. Fedtsch. ex Radzhi) Maxted	32	<i>V. kalakhensis</i> Khattab, Maxted & Bisby
		33	<i>V. johannis</i> Tamamschjan in Karyagin
			i var. <i>ecirrhosa</i> (Popov) H. Schäfer
			ii var. <i>procumbens</i> H. Schäfer
			iii var. <i>johannis</i>
		34	<i>V. galilaea</i> Plitm. & Zoh. in Plitm.
			i var. <i>galilaea</i>
			ii var. <i>faboidea</i> (Plitm. & Zoh. in Plitm.) H. Schäfer
		35	<i>V. serratifolia</i> Jacq.
		36	<i>V. narbonensis</i> L.
			i var. <i>salmonia</i> (Mout.) H. Schäfer
			ii var. <i>jordanica</i> H. Schäfer
			iii var. <i>affinis</i> Kornhuber ex Asch. & Schweinf.
			iv var. <i>aegyptiaca</i> Kornhuber ex Asch. & Schweinf.
			v var. <i>narbonensis</i>
		37	<i>V. hyaeniscyamus</i> Mout.
IX	<i>Faba</i> (Miller) Ledeb.	38	<i>V. faba</i> L.
			i subsp. <i>paucijuga</i> Murat.
			ii subsp. <i>faba</i>
			ii/a var. <i>minor</i> Beck
			ii/b var. <i>equina</i> Pers.
			ii/c var. <i>faba</i>

1.2.5 Diagnostic characteristics of *Vicia* subgenus *Vicia*

Throughout the taxonomic history of *Vicia*, certain characters have repeatedly been used to define and distinguish subgeneric groupings. These characters may be divided into two kinds, those used to define major divisions (i.e. subgenera or sections) and those used to distinguish subdivisions within the previously established major divisions.

There are a few characters that are commonly used to distinguish the major subgeneric groupings within subgenus *Vicia* and these have been used consistently. These major diagnostic characters are: presence of peduncle and, if present, the length of the peduncle in relation to either the flower or subtending leaf length; the number of flowers per inflorescence; presence of stipular nectaries; and the positioning of hairs around the style. Once the major groups have been established, many more characters are used to distinguish subgroups. These minor diagnostic characters are: life span; plant stature; number of flowers per inflorescence; number of leaflets per leaf; size of leaflets; calyx mouth shape; flower colour; vexillum shape; vexillum pubescence; legume pubescence; legume protrusion; relative legume size; relative legume shape; legume suture curvature; legume hairs type; seed shape; relative hilum length; relative position of the seed hilum and lens; and seed surface type.

The characters used to distinguish major and minor groupings are illustrated in the generalized diagram of vetch vegetative, floral, fruit and seed characters drawn in Figure 1.1.

2. ECOGEOGRAPHIC MATERIAL AND METHOD

2.1 Selection of representative specimens

Seventy-four taxa were included within the scope of the project, and representative specimens of each of these taxa were seen during the course of it. Maxted *et al.* (1994) stress that it is important to gather information of herbarium material from as many herbaria as possible, so that a clear estimate of taxon ecology and geography can be made. In an attempt to obtain representative specimens, herbarium specimens were borrowed from the appropriate major international herbaria listed in Appendix I.

Collecting missions to the centre of diversity of the subgenus were also undertaken during the course of the project and 592 *Vicia* subgenus *Vicia* accessions were collected from Britain, France, Spain, Syria, Turkey, the former Soviet Union and Yugoslavia.

During the course of the project, over 6000 specimens of the target taxon were seen. Each specimen was identified and those with detailed

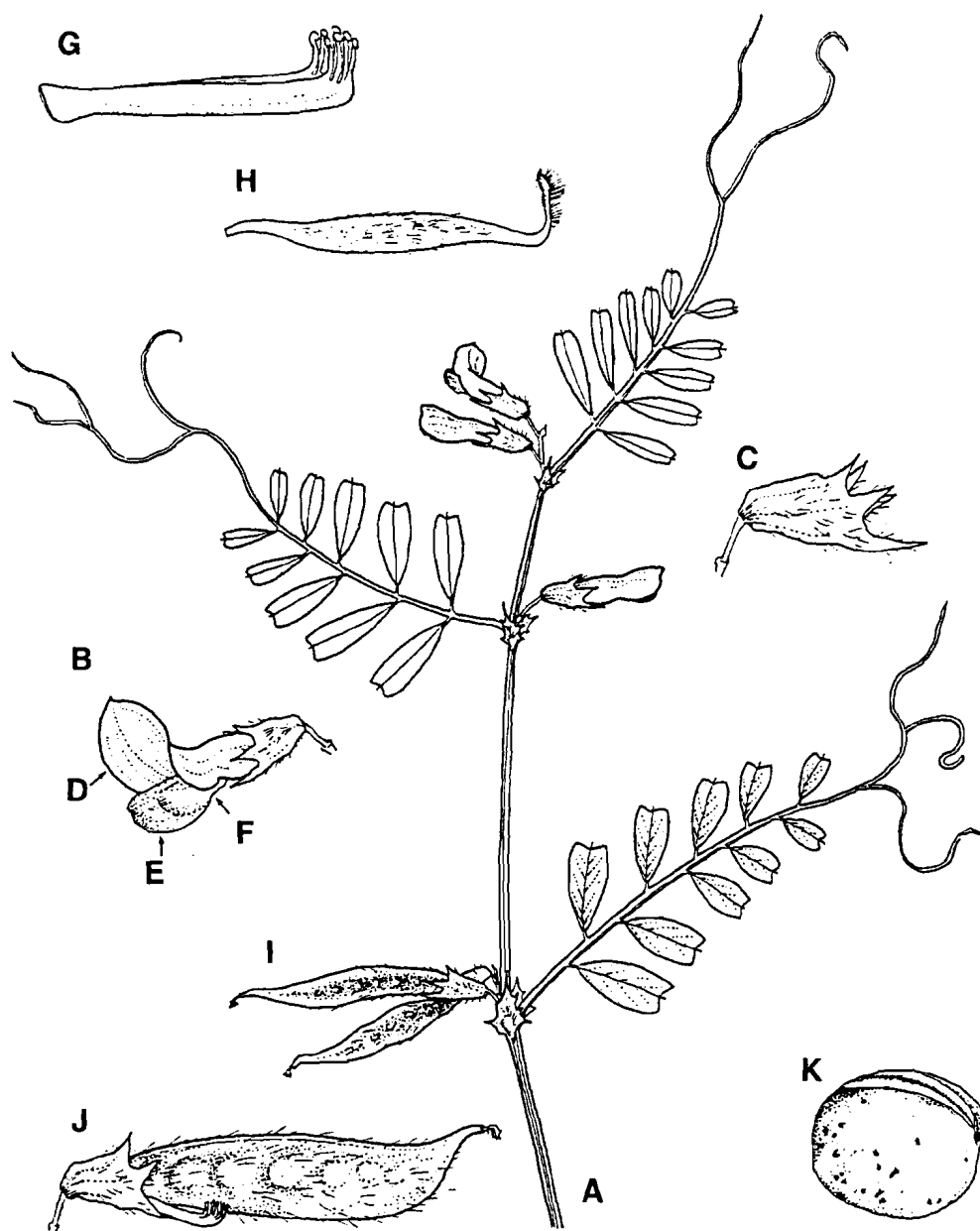


Figure 1.1. Generalized diagram of vetch, showing vegetative, floral, fruit and seed characters. A habit; B flower; C calyx; D standard petal; E wing petal; F keel petals; G stamens; H ovary, style and stigma; I fruit; J fruit; K seed.

ecogeographic passport data were selected for inclusion in the database. This meant that about a third of the specimens seen were selected to have data included in the ecogeographic database. A minimum level of passport data of at least the location data was required for a specimen to be included in the database. Specimens were, however, also selected if they were of particular interest, i.e. odd or rare forms.

The database contains information on 2008 specimens from 18 major international herbaria. These specimens represent collections from 113 countries of 38 species and 36 supra-specific taxa. When planning the visits to herbaria, an attempt was made to see specimens that represented the range of geographic and ecological conditions under which subgenus *Vicia* are found. It was considered desirable to collect detailed passport data from those representative specimens of each taxa, rather than collect data from larger numbers of specimens that duplicate data already included in the database from previous specimens of that taxon.

In practice, the specimens, whose data were incorporated in the database, were often those collected more recently. These specimens were commonly associated with more detailed, legible passport data that were more likely to have remained current. Extensive use of specimens collected several hundred years ago may provide details about historical distributions, but is likely to yield less useful information about contemporary extant populations.

2.2 The ecogeographic database

The building of an ecogeographic database necessitated the choice of a proprietary DBMS package. Freeston (1984) provides a review of the features that should be considered when choosing a DBMS, listing such considerations as: cost, portability, ease of use, ease of use of programming language, available applications, multi-user access, ease of data protection and security. Having considered these points, the decision was taken to use dBASE IV (Ashton-Tate 1989) as it is the widely used standard adopted by IPGRI. Details of the operating instructions for constructing and manipulating files are provided in the dBASE IV manual (Chou 1989).

The database was constructed using two personal computers: an Amstrad PC 1640 HD20 with a 20 megabyte hard disk, using MS-DOS and a Toshiba 1600E with a 20 megabyte hard disk, using MS-DOS. All the data collected were placed directly into the database using one of these computers.

The ecogeographic database was made up of seven files linked using the relational model. Details of the actual structures are discussed by Maxted (1990). The file structure was kept as simple as possible, incorporating all the available ecogeographic data. Initially, it was considered appropriate to record the vernacular names used for species but during the study, no ver-

nacular names were encountered and so the field was deleted from the database.

The relational model was used during the design of the database, in an attempt to avoid data duplication, so the eight database files were interlinked and so should not be considered as isolated data files. However, one file is central to the database and contains the bulk of the ecogeographic data. The other seven files should be seen as adjuncts to this file, each containing the explanation for the codes used in the central file.

The central file contained the following ecogeographic data: individual specimen accession codes, taxon name, collector's name and number, herbarium where the specimen is kept, whether it has flowers and or mature legumes, the collection date, ISO three-letter country code, region within country, detailed specimen provenance, latitude, longitude, altitude, soil type of collection site and the habitat of collection site. The bibliographic details of the nomenclature of *Vicia* subgenus *Vicia* taxa and related synonyms were contained in a separate file.

Though specimens whose data were included in the database were positively selected for detailed ecogeographic data there were still blank fields in the database. In general, it was much easier to record curatorial or geographic rather than ecological data from the herbarium specimens seen. The majority of specimens had a collector(s) name, collection number and locality details recorded, though the degree of detail recorded for the latter varies markedly between specimens. However, ecological details such as altitude, soil type, habitat and biotic interactions are less commonly recorded on herbarium specimen labels. This problem of missing ecological data results from plant collectors often failing to record any ecological site details for their specimens. It was noticeable that more recent and contemporary collections often have more detailed ecological data recorded. The lack of ecological herbarium label data would inhibit the drawing of conclusions on the ecological preference of the target taxon from a purely herbarium-based ecogeographic survey. During this study, however, the herbarium passport data were complemented by practical knowledge of taxon resulting from extensive field study and so ecological conclusions could be discussed.

3. ECOGEOGRAPHIC CONSPECTUS

3.1 Introduction

The ecogeographic conspectus is intended to be a summary of the ecogeographic information available for *Vicia* subgenus *Vicia*. The subgenus,

as circumscribed by Maxted (1991a, 1993a), contains 92 taxa, with a distribution centring on Southern Europe and Northwest Asia. During the course of this study, field observations of all but the rarest taxa were made and this field knowledge has enhanced my understanding of their ecogeography. This knowledge has been incorporated into the ecogeographic conspectus.

Sections, series, species, subspecies and varieties follow the sequence proposed by Maxted (1991a, 1993a), from the primitive perennial species to the cultivated fababean. Where available the following information is provided for each taxon included in subgenus:

- a. accepted taxon name, author(s), date of publication, where published;
- b. reference to published descriptions and illustration;
- c. descriptions for each section (taken from Maxted 1991a);
- d. number of taxa in taxon;
- e. phenology, flowering duration;
- f. chromosome numbers, taken from the literature (taken from Maxted 1991a);
- g. geographical distribution, countries from which the taxon is recorded, which includes reliable records from the literature. Three-letter country ISO code units are used. An 'I' in brackets following the ISO code indicates the taxon is introduced in that country. To present a complete coverage of geographical details, extra distributional data were added from Allkin *et al.* (1983) and Greuter *et al.* (1989);
- h. distribution maps of specimens, produced using the program ATLAS (maps do not represent any endorsement of political boundaries on behalf of IPGRI);
- i. ecological details, including altitude, soil preference and habitat notes;
- j. geographical notes, discussion and interpretation of the taxon's distribution;
- k. ecological notes, discussion and interpretation of the taxon's ecological preferences;
- l. taxonomic notes, discussion and interpretation of the available taxonomic data.

The conspectus is a summary of the available data, but more detailed information on individual specimen ecogeography can be obtained by querying the database. A listing for the common synonyms associated with the taxa of the subgenus is provided in Appendix II and the full specimen citation for the specimens used during the ecogeographic study is provided in Appendix III.

As discussed above, the failure of the majority of collectors to record ecological data on specimen labels makes the drawing of ecological conclusions

from a herbarium survey hazardous. However, in this case the herbarium study was accompanied by a systematic collecting programme from the taxon's centre of diversity, which resulted in the majority of the taxa being seen in the field and so detailed ecological data could be incorporated into the conspectus.

To indicate individual taxon concentrations, a mapping program, ATLAS, was used to plot each specimen location onto a customized map of the taxon's region of distribution. ATLAS (Strategic Locations Planning 1987) was used to show the distribution of 37 species from the subgenus (*V. faba* was excluded as it is not known in the wild). The latitude and longitude data for each specimen were taken from the ecogeographic database, converted to ATLAS input format, imported to ATLAS and then plotted onto customized maps.

All the data included in the conspectus, except the ecological, geographic and taxonomic notes, were produced direct from the ecogeographic database for subgenus *Vicia* and a copy of this database can be obtained on request from IPGRI.

The following abbreviations are used in the references to published descriptions:

- Fl. Eur.** Ball, P.W., (1968). *Vicia* in Flora Europaea, Vol. 2: 129-136. Cambridge University Press, Cambridge, U.K.
- Fl. Iran.** Chrtkova-Zertova, A., (1979). *Vicia* in Flora Iranica Vol. 140: 16-57. Akademische Druck-u. Verlagsanstalt, Graz, Austria.
- Fl. Iraq** Townsend, C.C., (1974). *Vicia* in Flora of Iraq, Vol. 3: 512-544. Ministry of Agriculture & Agrarian Reform, Baghdad, Iraq.
- Fl. Pal.** Zohary, M., (1972). *Vicia* in Flora Palaestina, Vol. 2: text 194-209, plates 278-298. Israel Academy of Sciences and Humanities, Jerusalem, Israel.
- Fl. Syr.** Mouterde, P., (1966). *Vicia* in Nouvelle Flore du Liban et de la Syrie, Vol. 2: 396-414. Librairie Orientale, Beyrouth, Liban.
- Fl. Tur.** Davis, P.H. & Plitmann, U. (1970). *Vicia* in Flora of Turkey and the East Aegean Islands, Vol. 3: 274-325. Edinburgh University Press, Edinburgh, U.K.
- Fl. U.S.S.R.** Fedtschenko, B.A., (1948). *Vicia* in Flora of the U.S.S.R. Vol. XIII: 406-475. Izdatel'stvo Akademii Nauk SSSR, Moskva, U.S.S.R.
- Illust. Draw. Brit. Pl.** Ross-Craig, S., (1948). Illustrated Drawings of British Plants, Vol. 3: 55-72.

3.2 The ecogeographic conspectus

Vicia Subgenus *Vicia* L., Sp. Pl., 734 (1753). Kupicha, Notes Roy. Bot. Gard. Edinburgh., 34: 320 (1976).

Plants annual or perennial. Leaves hypostomatic to hypo-amphistomatic, paripinnate, usually tendrilous, occasionally mucronate; stipules monomorphic, always with a glandular nectariferous pit on the abaxial side. Inflorescence 1-several flowered, peduncle very rarely longer than subtending leaf, commonly shorter than the flower, flower sometimes sessile in leaf axil. Calyx regular or irregular. Vexillum platonychoid (limb and claw similar width) or stenonychoid (limb broader than claw), rarely pubescent on abaxial surface. Style with hairs all round apex or only on abaxial side, always tufted abaxially. Legume not stipitate, containing +/- well-developed "woolly" parenchymatous tissue between the seeds; pods oblong, rhomboid or linear. Seeds with long to short hila; testa smooth or rarely rough; lens near hilum or on opposite side of seed.

Number of taxa: 92 **Chromosome numbers:** $2n = 10, 12, 14, (16, 18)$

Geographical distribution: Europe, North Africa, Near and Middle East, Southwest Asia, Northern Asia.

Geographical notes: The thirty-eight species have a centre of diversity in Southern Europe and Western Asia. A few species, largely of sections *Vicia* and *Atossa*, have been introduced to other temperate areas of the world.

Ecological notes: The subgenus includes species with preferences for diverse habitats, ranging from the shaded woodland species of sect. *Atossa*, the marshy endemic of basaltic soils *V. dionysiensis*, the weeds of dry cultivation and to the crop, *Vicia faba*.

Taxonomic notes: The subgenus is divided into nine sections, nine series, 38 species, 14 subspecies and 22 varieties. The order of taxa follows that presented by Maxted (1993a) and was derived from a phenetic study of the subgenus. The classification is ordered from the primitive species of sect. *Atossa*, passes through the few flowered, adventitious weeds of sect. *Hypechusa*, *Peregrinae* and *Vicia* and culminates in the more robust, crop-like forms of the *V. narbonensis* complex, concluding with *V. faba*.

Within the subgenus the most distinct section is the monotypic sect. *Faba*. There has been much taxonomic controversy over the natural relationships between *V. faba* and the other *Vicia* species. Should the species be in a distinct series, section, subgenus or even genus? Maxted *et al.* (1991) and Maxted (1993a) concluded that the most natural placement is in a monotypic section.

3.2.1 Section *Atossa*

I. Section *Atossa* (Alef.) Asch. & Graebner, Syn. Mitteleur. Fl., 6, 2: 949 (1909).

Kupicha, Notes Roy. Bot. Gard. Edinburgh, 34: 320 (1976).

Perennial; erect or climbing; stem slender or stout. Stipules entire or semi-hastate; 2.5-9 x 1-5 mm; edge entire or with 1-6 teeth. Leaf 25-154 mm;

apex tendrilous or mucronate; 2-28 leaflets per leaf; leaflet 10-85 x 3-38 mm; symmetric; margins entire. Peduncle 7-32; with 1 to 8 flowers. Calyx mouth oblique; lower tooth longer than upper; base gibbous; pedicel 1-3 mm. Flowers 12-22 mm; all petals approximately equal length; standard yellow, blue or purple; shape platonychoid (limb and claw same width); claw bowing absent; upper standard surface glabrous. Wing marking absent; wing limb with slight basal folding. Legume 16-43 x 6-9 mm; oblong; laterally flattened; sutures straight or curved; valves glabrous (without hairs); septa absent; 2-7 seeds per legume. Seeds 2.5-4 x 3-5 mm; round or oblong; not laterally flattened; hilum over half seed circumference; lens positioned near hilum; testa surface smooth.

Number of taxa: six.

Chromosome number: 12, 14, 16, 18.

Geographical distribution: Europe, Near East and Asia eastward to the Pacific.

Geographical notes: This section is relatively widely distributed from Iceland to Japan, but the extent of the distribution is largely due to a single species, *V. sepium*. The other three species of the section are much more restricted. There are two centres of diversity, one concentrated in Northern Yugoslavia and the other in the Caucasus.

Ecological notes: All four species are encountered in similar habitats, stable semi-shaded woodland (coniferous, mixed or deciduous), woodland edges or hedgerows. They show no preference for a particular soil type, but are more commonly encountered at altitudes over 500 m (except *V. sepium*). The four species can be found in open or dense vegetation, under dry or moist conditions.

Taxonomic notes: The four species easily form three series. *V. balansae* and *V. abbreviata* are closely related.

A. Series *Pseudovicilla* Maxted, Kew Bull. 47(1): 129-130 (1991c).

Number of taxa: one

Chromosome number: 14

Geographical distribution: Central Southeast Europe

Taxonomic notes: Linnaeus considered *V. oroboides* a member of the genus *Orobus* (*O. lathyroides*) and the resemblance with *Lathyrus* sect. *Orobus* and the oroboid *Vicia* is clear. However, Hanelt & Mettin (1970b), Bassler (1973) and Kupicha (1976) have each studied the morphological and cytotaxonomic relationship between *V. oroboides* and other Viciae. Each concluded that the species was a natural member of *Vicia* subg. *Vicia* and that it was quite distinct from the other oroboid *Vicia* in subg. *Vicilla* sect. *Vicilla*.

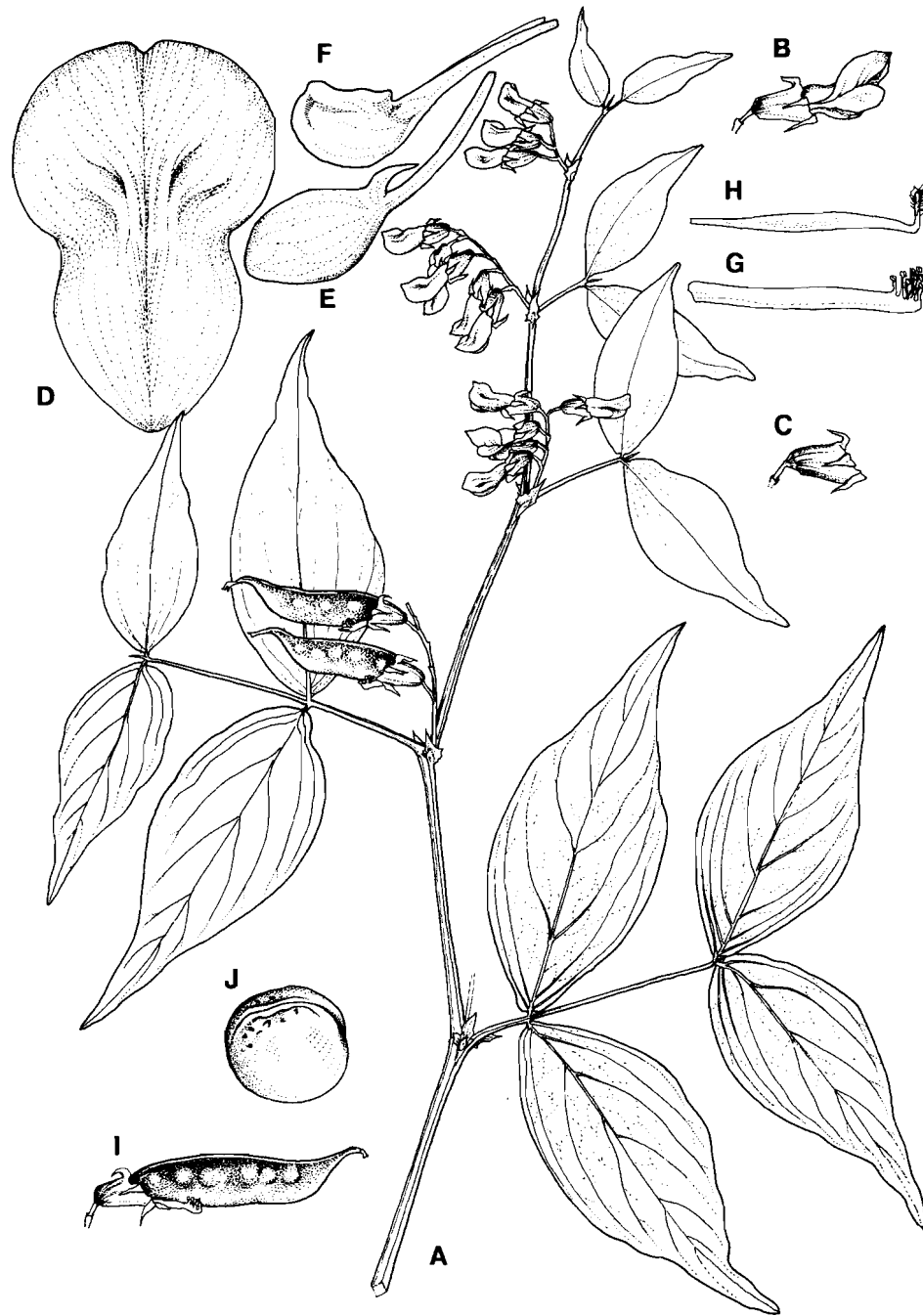


Figure 3.1. *Vicia oroboides*: A habit x 0.5; B flower x 1; C calyx x 1; D standard petal x 2; E wing petal x 2; F keel petal x 2; G stamen x 2; H ovary, style and stigma x 2; I fruit x 1; J seed x 5. A - J from Maxted 1259 and 1000.

1. *V. oroboides* Wulfen in Jacq., Coll. Bot. Chem. Hist. Nat. Sp., 4: 323 (1790).
Fl. Eur., 2: 134. Figure 3.1.

Phenology: May - September

Chromosome number: 14.

Geographical distribution: AUT, HUN, ITA, YUG. Map 1.

Ecology: Alt. 150 - 1400 m; Hab. pasture and woodland on hill and mountainsides.

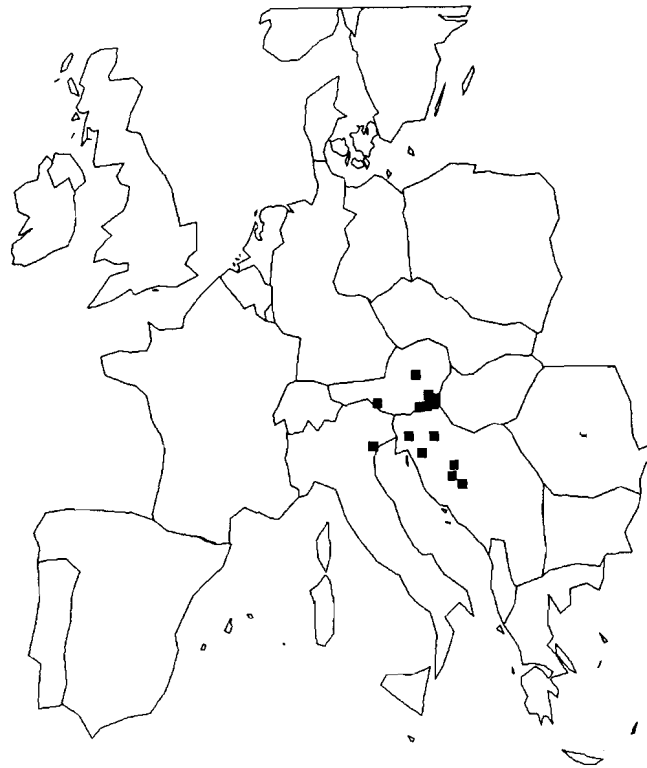
B. Series *Truncatulae* (B. Fedtsch. ex Radzhi) Maxted, Kew Bull. 47(1): 129-130 (1991c).

Number of taxa: two.

Chromosome number: 14

Geographical distribution: Southeast Europe and West Asia

Geographical notes: The two species of this series are commonly found in Northeast Turkey and the Caucasus, though *V. abbreviata* is also found further West in Southeast Europe.



Map 1. Distribution of *Vicia oroboides*.

Taxonomic notes: Stankevich (1988) considers the two taxa of this series to be subspecies of *V. abbreviata*. After studying natural populations in the Caucasus she concluded that the two taxa intergrade from one to the other. This, she considered, was especially apparent in the subalpine zone between Karmadon and Chmi in North Osetia, Russia. She argues that two taxa have been able to remain morphologically distinct due to their preference for different ecological niches. While collecting in the Caucasus (Spring/Summer 1989), I located six populations of *V. balansae*. At five of these locations, *V. abbreviata* was equally abundant. Within the five sites, where both species were found, neither species showed a clear niche distinction and no putative hybrid forms were encountered. On the basis of morphological and ecological investigations of the complex Maxted (1993d) concluded that the specific distinction should be retained.

2. *V. balansae* Boiss., Fl. Orient. 2: 569 (1872). Fl. Tur., 3: 304; Fl. USSR., 13: 457.

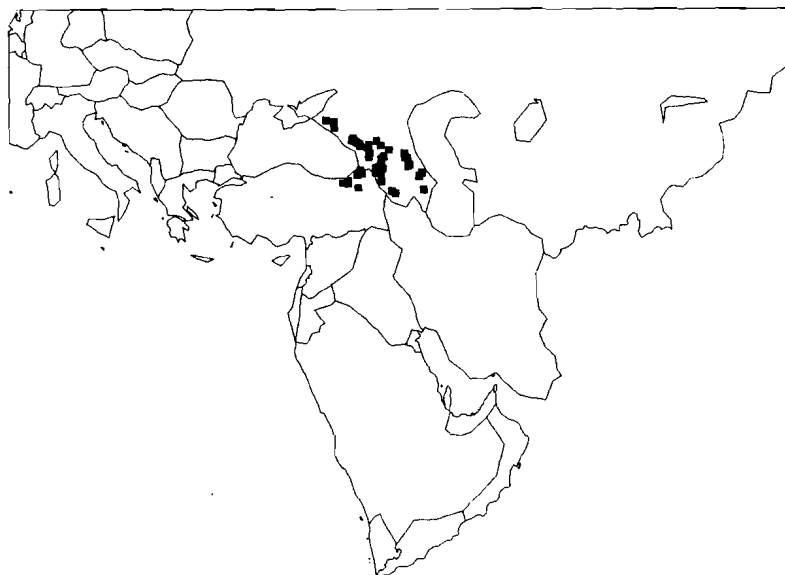
Figure 3.2.

Phenology: May - August

Chromosome number: 12, 14.

Geographical distribution: SUN, TUR. Map 2.

Ecology: Alt. 550 - 2700 m; Hab. moist alpine pastures and forests.



Map 2. Distribution of *Vicia balansae*.

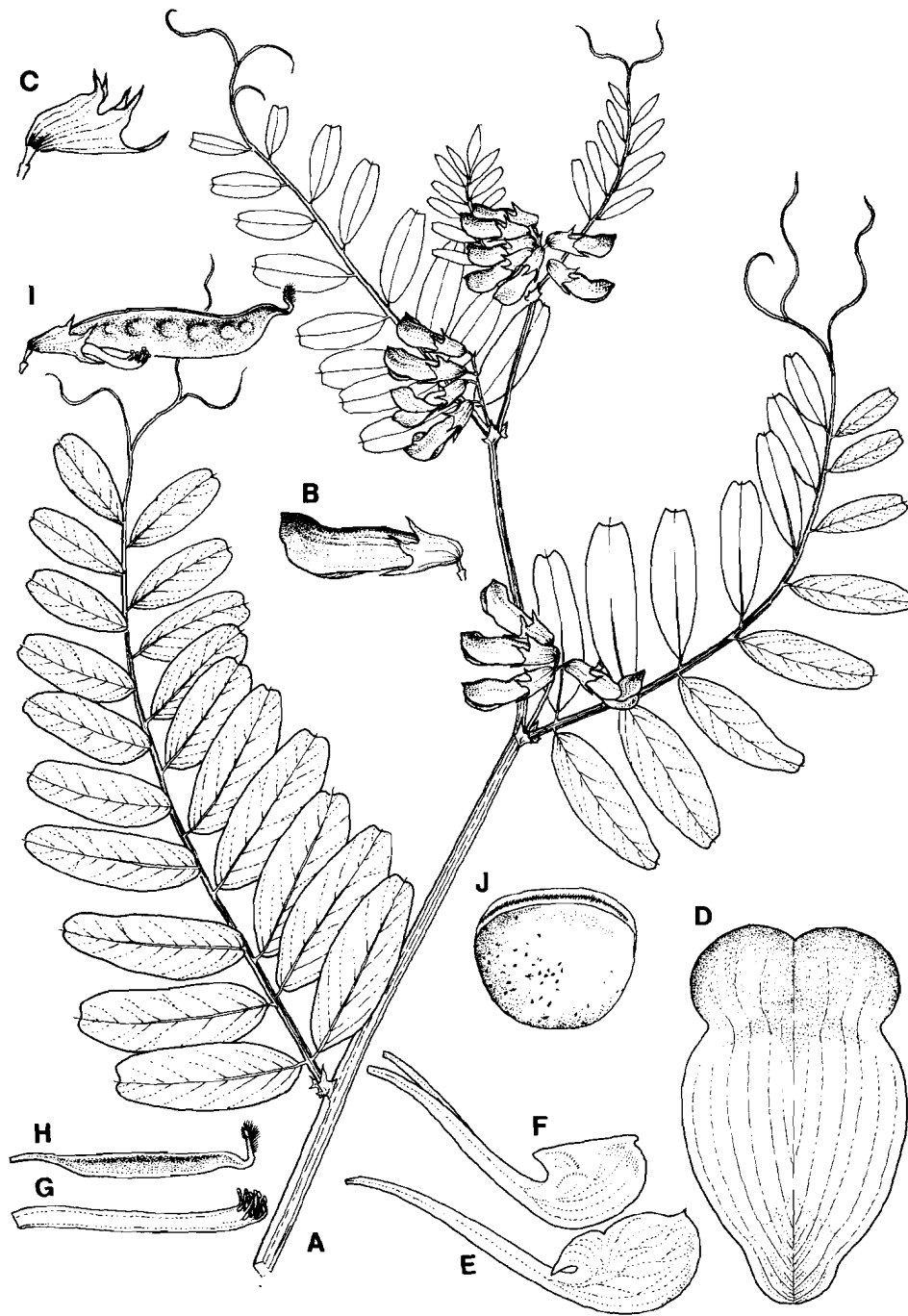


Figure 3.2. *Vicia balansaе*: A habit x 0.5; B flower x 1; C calyx x 1.5; D standard petal x 2; E wing petal x 2; F keel petal x 2; G stamen x 2; H ovary, style and stigma x 2; I fruit x 1; J seed x 4. A - H and J from Maxted 6780 and 6894, I from Maxted 6964.

3. *V. abbreviata* Fischer ex Sprengel, Pl. Min. Cog. Pug. Prim., 1(86): 50 (1813).
Fl. Iran., 43-44; Fl. Tur., 3: 303-304; Fl. USSR., 13: 456-457; Illust. Fl. Iran.,
32, fig. 3.

Phenology: May - August

Chromosome number: unknown

Geographical distribution: AUT, BGR, DEU, IRN, ROM, SUN, TUR, YUG.
Map 3.

Ecology: Alt. 100 - 2400 m; Hab. mountain forest and forest margins.

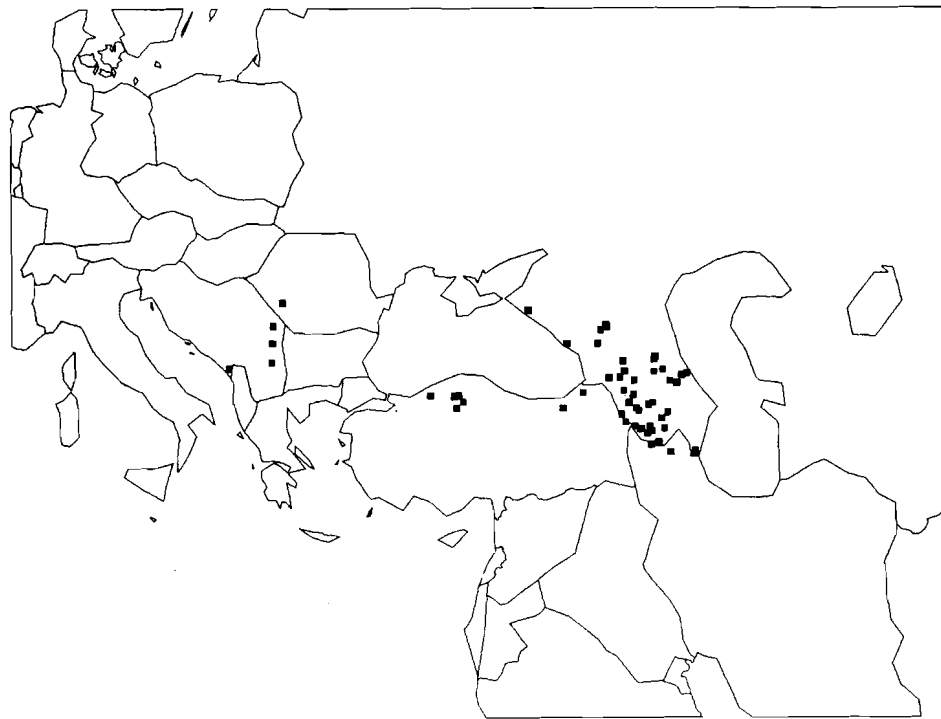
C. Series *Atossa* (Alef.) Aschers. & Graebner, Syn. Mitteleur. Fl., 6, 2: 949
(1909).

Number of taxa: three.

Chromosome number: 14, 18

Geographical distribution: Europe and Northern Asia

Geographical notes: This monospecific section contains the most widespread
species of the section, which is a common woodland herb of Northern
Eurasia.

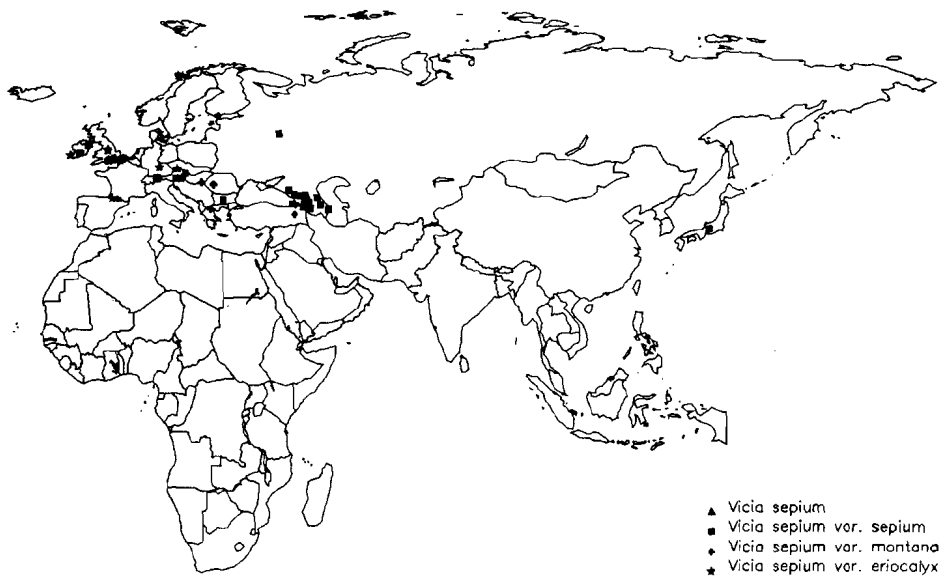


Map 3. Distribution of *Vicia abbreviata*.

4. *V. sepium* L., Sp. Pl., 2: 737 (1753). Fl. Eur., 2: 134; Fl. Tur., 3: 304; Fl. USSR., 13: 455-456; Illust. Draw. Brit. Pl., 3: 64.

Phenology: May - October **Chromosome number:** (12), 14, (16), 18.

Geographical distribution: AUT, BGR, CAN(I), CSK, DEU, DNK, FIN, FRA, GBR, GRC, HUN, IRL, JPN, NOR, ROM, SWE, SUN, TUR, USA(I). Map 4.



Map 4. Distribution of *Vicia sepium*.

i. *V. sepium* var. *sepium* L., Sp. Pl. 2: 737 (1753).

Phenology: May - October

Chromosome number: 14

Geographical distribution: AUT, BGR, CAN(I), CZ, GBR, IRL, JPN, SUN, USA(I).

Ecology: Alt. 70 - 2200m; Hab. hedgerow and open woodland.

ii. *V. sepium* var. *ericalyx* Celak, Prodr. Fl. Bohmen. 4: 910 (1881).

Phenology: May - September

Chromosome number: 14

Geographical distribution: AUT, CSK, DEU, DNK, FRA, GBR, IRL, NOR, SWE, USA(I).

Ecology: Alt. 2 - 1015m; Hab. open woodland and shaded disturbed land.

iii. *V. sepium* var. *montana* Koch, D.G.D.J., Syn. Fl. Germ. Helv., 1: 196 (1835).

Phenology: June - September

Chromosome number: 14

Geographical distribution: CSK, FIN, FRA, GBR, GRC, HUN, NOR, ROM, TUR.

Ecology: Alt. 75 - 1600m; Hab. hedgerow and open woodland.

3.2.2 Section *Microcarinae*

II. Section *Microcarinae* Maxted, Kew Bull. 47(1): 129-130 (1991c).

Annual; climbing or scrambling; stem slender. Stipules entire or semi-hastate; 1-3.5 x 1-1.5 mm; edge entire or with 1-6 teeth. Leaf 23- 35 mm; apex tendrilous; 2-6 leaflets per leaf; leaflet 8-13 x 2-3 mm; symmetric; margins entire. Peduncle 10-20 mm; with 22-4 flowers. Calyx mouth straight; teeth subequal; base not gibbous; pedicel 1-3 mm. Flowers 9-16 mm; keel distinctly shorter than wings; standard cream; shape stenonychioid (limb broader than claw); claw bowing absent; upper standard surface glabrous. Wing marking absent; wing limb with slight basal fold. Legume 17-23 x 6-7 mm; oblong; round in cross section; sutures curved; valves glabrous; septa absent; 3-5 seeds per legume. Seeds 3.5 to 6.0 mm; round; not laterally flattened; hilum less than quarter of seed circumference; lens positioned opposite to hilum; testa surface smooth.

Number of taxa: one.

Chromosome number: $2n = 12$

Geographical distribution: SYR.

Geographical notes: The single species of this section is a very restricted endemic of the Djebel Druse in Southern Syria.

Ecological notes: Within the Djebel Druse this species is restricted to a small number of sites. Each site is located in a treeless valley bottom, with basaltic soil, at an altitude of about 1350 m. The sites are moist, but not waterlogged pastures. Mouterde (1961) described the species from sites in the Djebel Druse and in the area between Homs and Tartous. Both areas

have similar volcanic, basaltic soils. These soils are relatively uncommon in Syria and an obligate requirement for these soils may explain the species' limited distribution. The restriction of *V. dionysiensis* to these two areas suggests it is a relict species, dependent on these restricted edaphic enclaves for survival.

Taxonomic notes: Mouterde (1953) allies *V. dionysiensis* distantly to *V. cypria* Kotschy ex Unger & Kotschy and *V. singarensis* Boiss. & Hausskn., as they each are glabrescent, have few leaflets per leaf and individual leaflets are relatively long. The resemblance with these subgenus *Vicilla* sect. *Trigonellopsis* species is superficial. *V. dionysiensis* is a member of subgenus *Vicia* because it shows the diagnostic features of the subgenus: presence of the nectariferous gland on the abaxial stipule surface, peduncle shorter than the subtending leaf and one to few flowers per inflorescence. Within the subgenus, *V. dionysiensis* is distinguished by the marked reduction in size of the keel, stamen, ovary and stigma compared to the standard and wing lengths. These characters make it a distinct, peripheral member of the subgenus. The lens position, opposite the hilum on the seed circumference, links the species to section *Hypechusa*, which shares this characteristic. More particularly the stenonychioid standard suggests an allegiance with the species in the series *Hyrcaicae*, most specifically *V. assyriaca* Boiss.

5. *V. dionysiensis* Mout., Flore du Djebel Druze, 140 (1953). Fl. Syr., 2: 412-413. Figure 3.3.

Phenology: March - May

Chromosome number: 12.

Geographical distribution: SYR (endemic). Map 5.

Ecology: Alt. 1320 - 1380 m; Soil basaltic heavy black; Hab. moist meadows.

Geographical notes: This species was initially described from the Jebel Druze, in Southern Syria, but Mouterde (1961) refers to the location of two populations between Homs and Tartous in Western Syria. I have located four populations in the Jebel Druze. During the Springs of 1986, 1989 and 1992, I searched extensively the area between Homs and Tartous, but was unable to locate any *V. dionysiensis* population in this area, which possibly indicates the species is now extinct in Tartous province.

3.2.3 Section *Hypechusa*

III. Section *Hypechusa* (Alef.) Aschers. & Graebner, Syn. Mitteleur. Fl., 6: 957 (1909).

Annual; climbing; stem slender. Stipules entire or semi-hastate; 1-5.5 x 0.5-4 mm; edge entire or with 1-2 teeth. Leaf 14-105(-115) mm; apex tendrillous; 2-20 leaflets per leaf; leaflet 5-35(-40) x 1-15 mm; symmetric; mar-

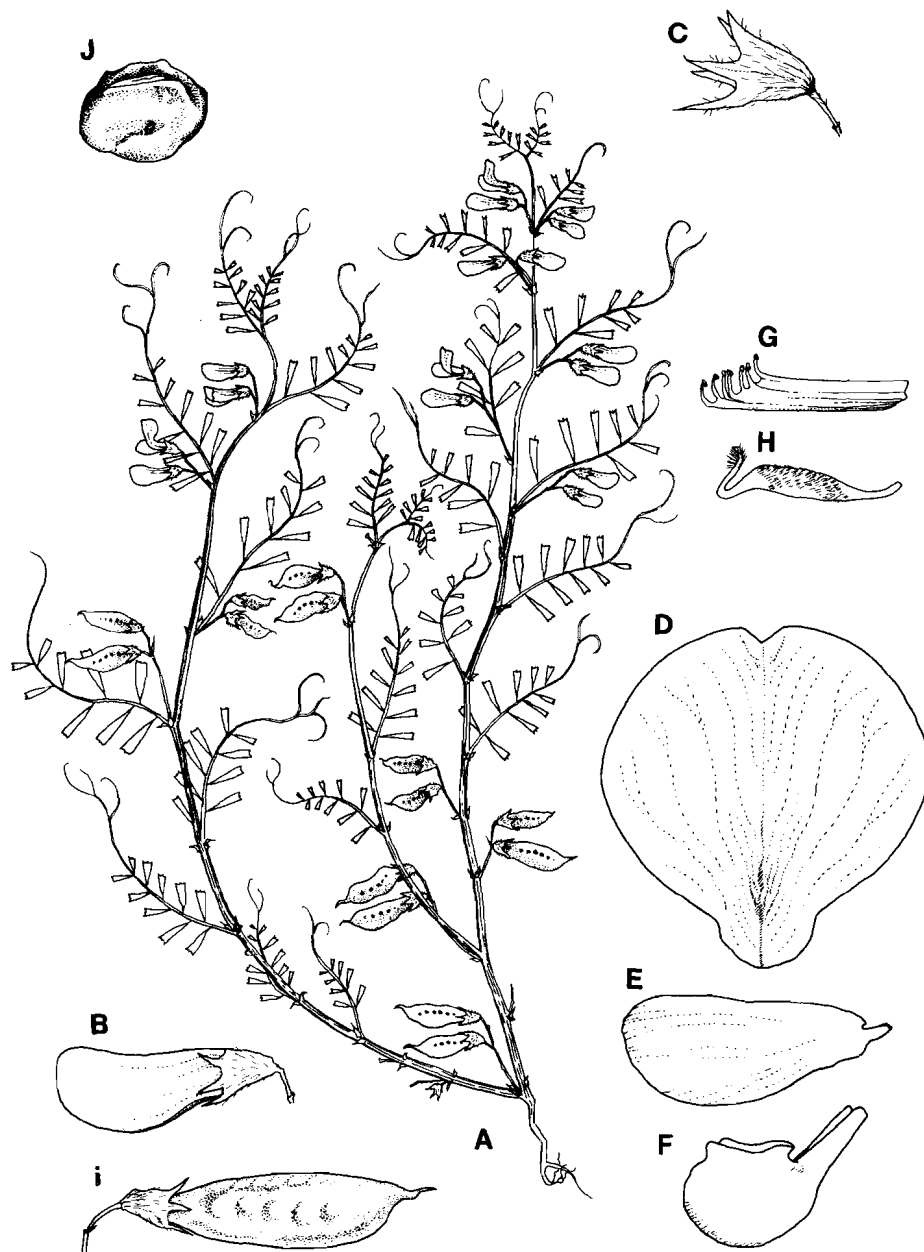
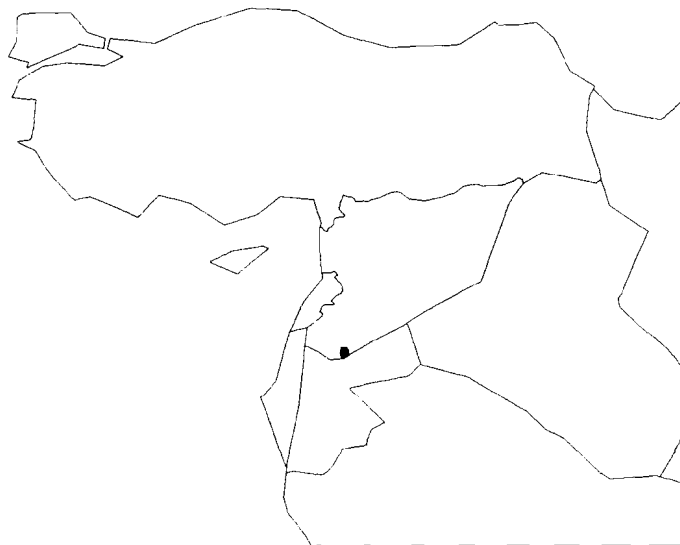


Figure 3.3. *Vicia dionysiensis*: A habit x 0.5; B flower x 2; C calyx x 4; D standard petal x 4; E wing petal x 4; F keel petal x 4; G stamen x 4; H ovary, style and stigma x 4; I fruit x 2; J seed x 5. A - H and J from Maxted 2507, I from Maxted 2498.



Map 5. Distribution of *V. dionysiensis*.

gins entire. Peduncle 1-10(-28); with 1-4 flowers. Calyx mouth oblique; lower tooth longer than upper; base gibbous; pedicel 1-4. Flowers 12-35 mm; all petals approximately equal length; standard cream or yellow, rarely blue or purple; shape platonychoid or stenonychoid; claw bowing absent; upper standard surface glabrous or pubescent. Wing marking absent or present; wing limb with slight or strong basal fold. Legume 14-40 x 6-12 mm; oblong; round in cross section; sutures curved; valves glabrous or pubescent; hairs simple or tuberculate (with swollen base); septa absent; 1-6 seeds per legume. Seeds 2-5.5 x 2-6.5 mm; round or oblong; not laterally flattened; hilum less than quarter of seed circumference; lens positioned opposite to hilum; testa surface smooth.

Number of taxa: 18

Chromosome number: 10, 12, 14.

Geographical distribution: West, Central and Southern Europe, Mediterranean Basin and Transcaaspa.

Geographical notes: The centre of diversity of sect. *Hypechusa* is focused on the fertile crescent countries of Southwest Asia. The distributional pattern of the two series within sect. *Hypechusa* is also centred on Southwest Asia, although ser. *Hypechusa* stretches further westerly to encompass Southern Europe.

Ecological notes: The species of this section are weeds of semi-arid areas, except for the rare species *V. esdraelonensis* which is reported to prefer moist areas. They are rarely found in shade, though I have collected *V. melanops* from shaded areas of Stone pine forest in Western Turkey. These species are most commonly found on the edges of cultivation through a broad range of soil types. The ser. *Hyrcaicae* species are in general larger plants and can stand more competition from surrounding plants than ser. *Hypechusa*.

Taxonomic notes: The current conception of sect. *Hypechusa* is similar to that used by Alefeld (1860) who first used the name for the genus *Hypechusa*. *V. mollis* was considered by Kupicha to belong to sect. *Peregrinae*. This grouping of *V. mollis* with *V. peregrina* and its allies was originally suggested by Boissier (1872). However, the fact that it possesses a short peduncle suggests that this species is more naturally allied to sect. *Hypechusa*, to which it has been transferred (Maxted 1993c). This position was adopted by Townsend (1967) and is supported by Plitmann (pers. comm.). The sect. *Hypechusa* taxa are split into two series, *Hyrcaicae* and *Hypechusa*, on the basis of peduncle length, corolla shape, corolla size and standard pubescence.

A. Series *Hyrcaicae* B. Fedtsch. ex Radzhi, *Novosti Sist. Vyssh. Rast.*, 7: 238 (1971).

Number of taxa: seven.

Chromosome number: 12, 14.

Geographical distribution: West Asia.

Taxonomic notes: The six species of ser. *Hyrcaicae* form a tight grouping and several authors (Townsend 1967, 1974; Ponert 1973; Meikle 1977) have suggested reducing some of the included species to subspecific rank. Plitmann (1967) notes the existence of intermediate forms between each of the ser. *Hyrcaicae* species, but ultimately retains their specific distinction. Ponert (1973) takes an extreme view and considers *V. assyriaca*, *V. noeana* subsp. *noeana* and subsp. *megalodonta* as subspecies of *V. hyrcanica*. Having noted these views, all the specimens seen during the course of this study have been easily attributed to one of these six species and specimens showing a degree of intermediacy remain very rare and so Maxted (in prep.) retains their specific identity.

6. *V. assyriaca* Boiss., *Diagn. Pl. Or. Nov. ser.* 1(9): 123 (1849). *Fl. Iran.*, 46-47; *Fl. Iraq*, 3: 530-532; *Fl. Syr.*, 2: 401; *Fl. Tur.*, 3: 304-305; *Illust. Fl. Iran.*, Tab. 33, fig. 3.

Phenology: April - June

Chromosome number: 12, 14.

Geographical distribution: CYP, IRQ, IRN, ISR, JOR, LBN, SYR, TUR. Map 6.



Map 6. Distribution of *V. assyriaca*.

Ecology: Alt. 600 - 2000 m; Hab. pasture, agricultural and disturbed land.

Taxonomic notes: Townsend (1967, 1974) and Meikle (1977), based on observations of herbarium material, consider *V. assyriaca* to be a synonym of *V. noeana*. Plitmann (1967), however, retained the two as distinct species, while noting the existence of intermediate forms. Having collected fresh material of both species I have found no introgressive specimens and am in no doubt that the specific distinction is warranted.

7. *V. esdraelonensis* Warb. & Eig, Repert. Sp. Nov. Reg. Veg. 25: 352 (1928). Fl. Pal., 2: 198; Fl. Syr., 2: 402; Fl. Tur., 3: 305-306; Illust. Fl. Pal., 2 (plates): 282.

Phenology: April - May **Chromosome number:** 12.

Geographical distribution: ISR, JOR, SYR, TUR. Map 7.

Ecology: Marshland.

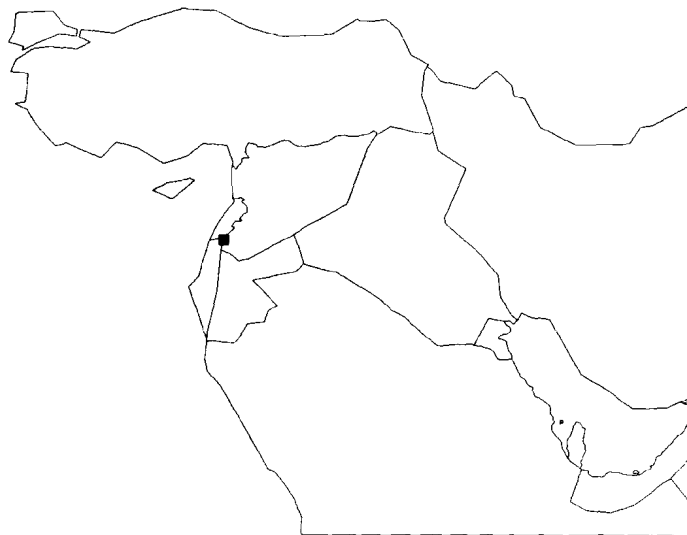
Taxonomic notes: This is a rare taxon with few herbarium specimens available.

8. *V. tigridis* Mout., Nouv. Fl. Liban et Syrie, 2: 402 (1969). Fl. Syr., 2: 402. Figure 3.4.

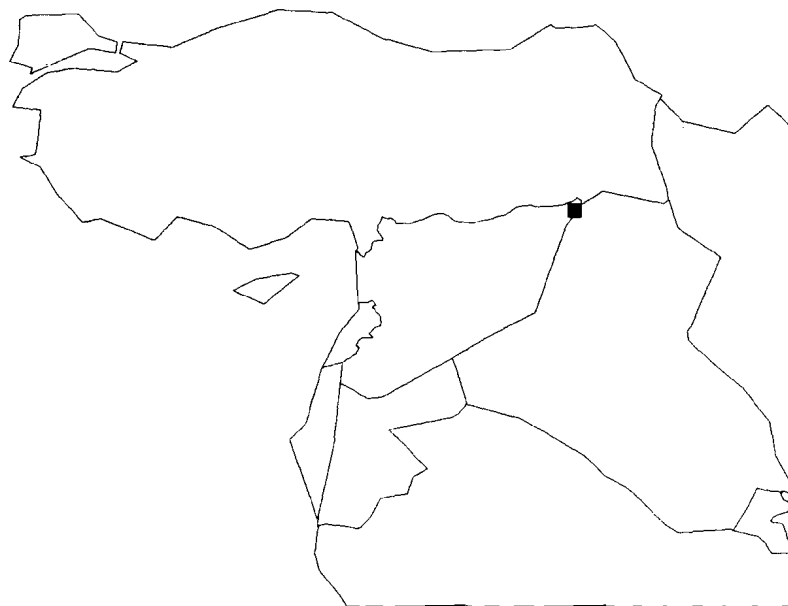
Phenology: April - May **Chromosome number:** 12.

Geographical distribution: SYR, (endemic to Ayn Diwar, Syria). Map 8.

Ecology: Alt. 400 m; Soil, Alluvial; Hab. riverbank meadow.



Map 7. Distribution of *V. esdraelonensis*.



Map 8. Distribution of *V. tigridis*

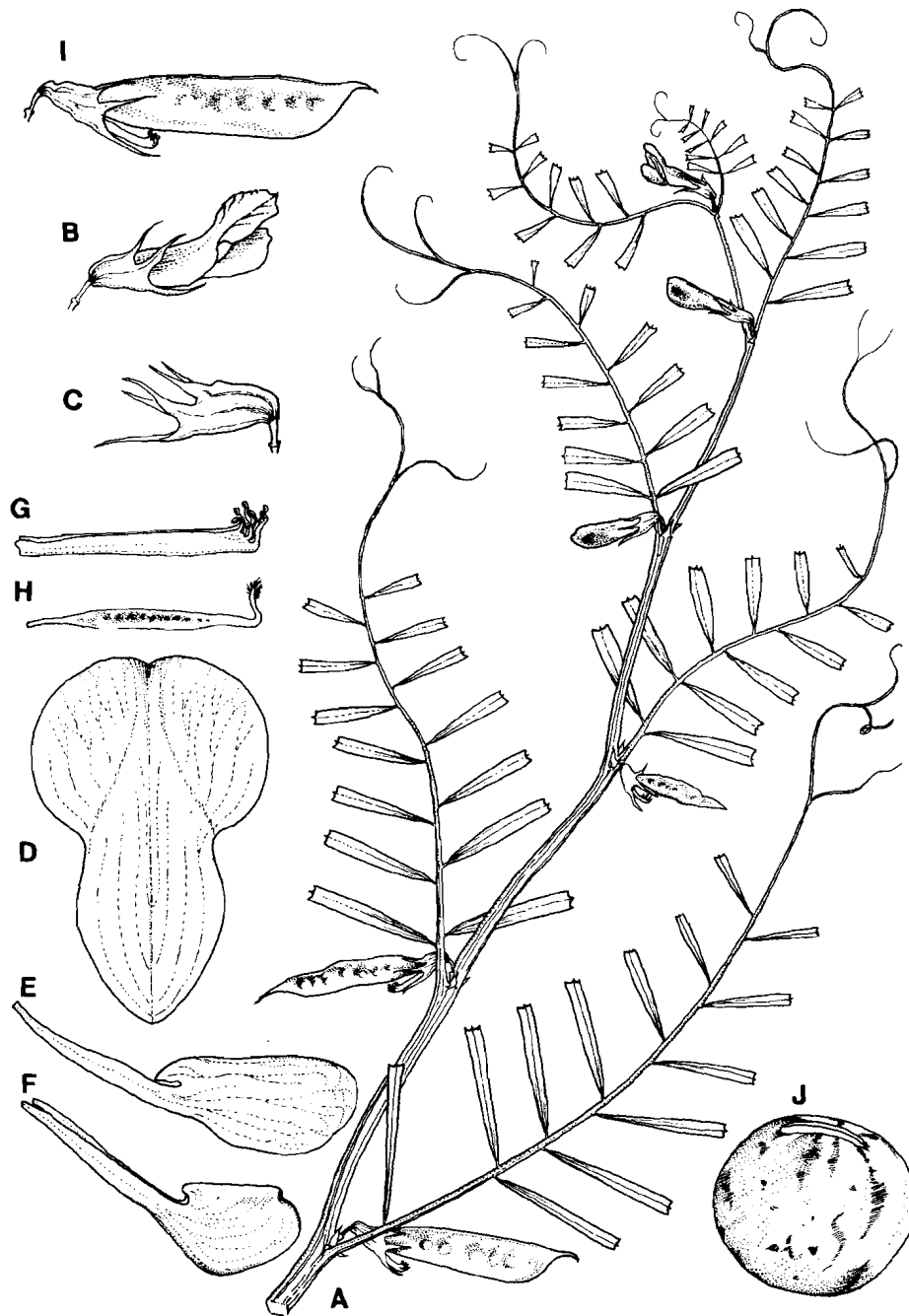


Figure 3.4. *Vicia tigridis*: A habit x 0.5; B flower x 1.25; C calyx x 2; D standard petal x 2; E wing petal x 2; F keel petal x 2; G stamen x 2; H ovary, style and stigma x 2; I fruit x 1; J seed x 5.5. A - J from Maxted 3287.

Taxonomic notes: A very rare taxon, restricted to a single population. The species is only known from the type collection and that made by Maxted, Ehrman & Khattab in 1986.

9. *V. galeata* Boiss., Diagn. ser. 1(2): 103 (1843). Fl. Pal., 2: 202; Fl. Syr., 2: 400-401; Fl. Tur., 3: 305; Illust., Fl. Pal., 2 (plates): 289.

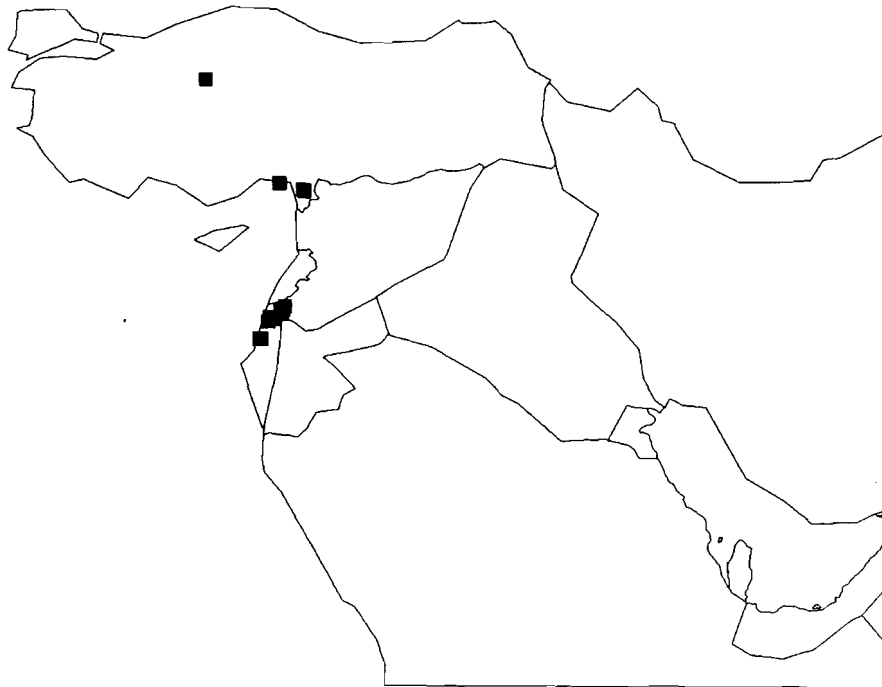
Phenology: March - July

Chromosome number: 12, 14.

Geographical distribution: ISR, IRQ, IRN, JOR, LBN, SYR, TUR. Map 9.

Ecology: Alt. 20 - 1400 m; Hab. moist roadside banks, disturbed or cultivated land.

Taxonomic notes: Plitmann (1967) notes the existence of transitional forms between *V. galeata* and other ser. *Hyrchanicae* taxa and between *V. hyrcanica* and *V. noeana* from Southeast Turkey from Southern Turkey, Eastern Iraq and Western Iran. However, field identification of populations from Syria, Turkey, the Caucasus and Central Asia has presented no problem and so the species are retained as a distinct entity.



Map 9. Distribution of *V. galeata*.

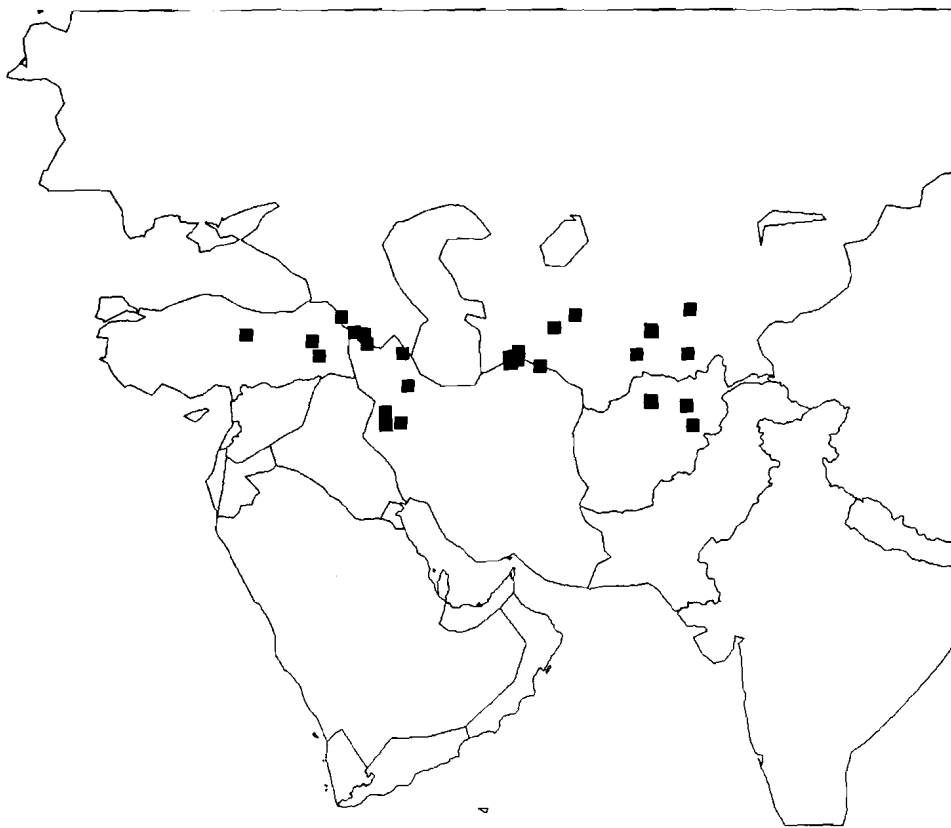
10. *V. hyrcanica* Fischer & C. Meyer, Ind. Sem. Hort. Petr. 2: 28 (1835). Fl. Iran., 44; Fl. Tur., 3: 306; Fl. USSR., 13: 465-466; Illust. Fl. Iran., 32, fig. 4.

Phenology: May - August

Chromosome number: 12, (14).

Geographical distribution: AFG, IRN, SUN, TUR. Map 10.

Ecology: Alt. 1150 - 1910 m; Hab. mountain pasture, agricultural and disturbed land.



Map 10. Distribution of *V. hyrcanica*.

11. *V. noeana* Reuter ex Boiss., Fl. Or. 2: 572 (1872). Fl. Syr., 2: 401; Fl. Tur., 3: 306-307.

Phenology: April - July

Chromosome number: 12.

Geographical distribution: CYP, IRQ, IRN, SYR, TUR. Map 11.

Ecology: Alt. 500 - 2000 m; Hab. localized minor cultivated crop in Turkey and Syria, weed of Disturbed and agricultural land.

i. *V. noeana* subsp. *megalodonta* Rech. f., Zur. Fl. Syr. Lib., Ark. Bot. 5(1): 262 (1959). Fl. Tur., 3: 307.

Phenology: May - June

Chromosome number: 12.

Geographical distribution: IRQ, TUR.

Ecology: Hab. disturbed and agricultural land.

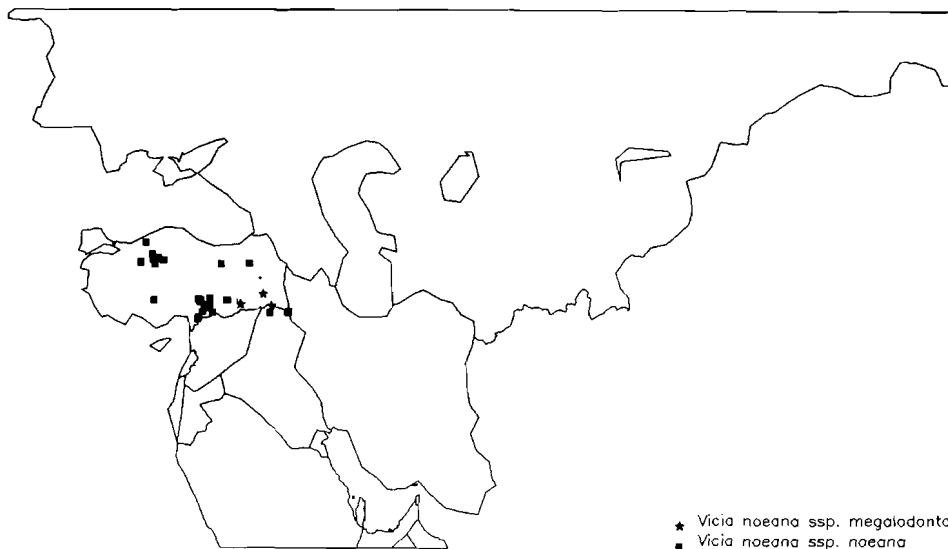
ii. *V. noeana* subsp. *noeana* (Reuter in Boiss.) Boiss., Fl. Or., 2: 572-573 (1872). Fl. Tur., 3: 306.

Phenology: April - July

Chromosome number: 12.

Geographical distribution: CYP, IRQ, (SUN?), SYR, TUR.

Ecology: Alt. 500 - 2000 m; Hab. localized minor cultivated crop in Turkey and Syria, weed of disturbed and agricultural land.



Map 11. Distribution of *V. noeana*.

B. Series *Hypechusa* (Alef.) Aschers. & Graebner Syn. Mitteleur. Fl., 6,2: 957 (1909).

Number of taxa: 11

Chromosome number: 10, 12, 14.

Geographical distribution: Europe, West Asia and North Africa.

Taxonomic notes: This series is more internally variable than ser. *Hyrceanicae* and following detailed study may warrant further subdivision.

12. *V. melanops* Sibth. & Smith, Fl. Graec. Prodr., 2: 72 (1813). Fl. Eur., 2: 135; Fl. Tur., 3: 307.

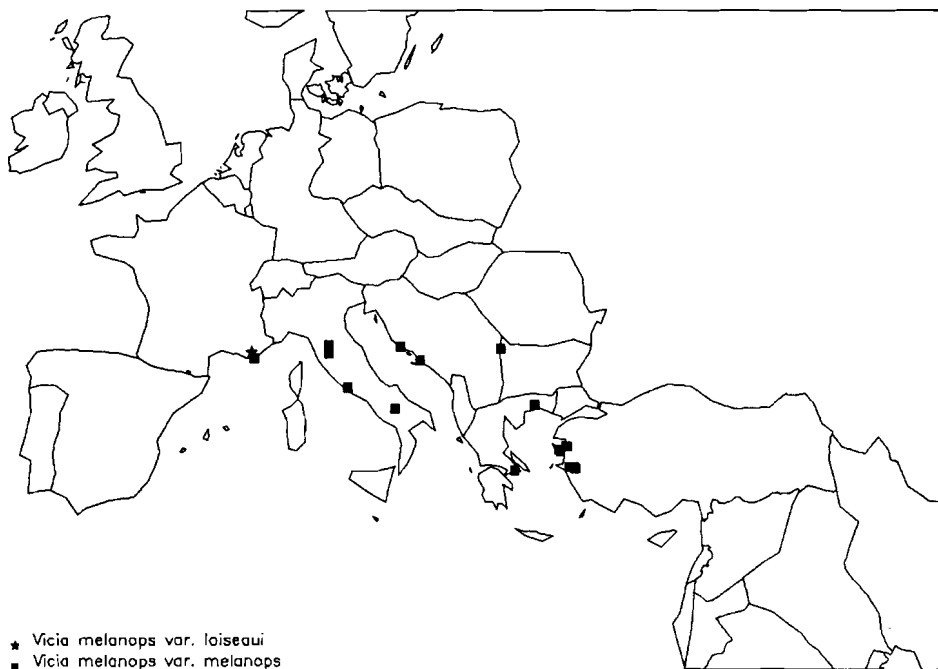
Phenology: April - June

Chromosome number: 10.

Geographical distribution: ALB, BGR, ESP, FRA, GRC, ITA, ROM, TUR, YUG. Map 12.

Ecology: Alt. 150 - 1300 m; Hab. woodland and more rarely an agricultural weed.

i. *V. melanops* var. *melanops* Sibth. & Smith, Fl. Graec. Prodr., 2: 72 (1813).



Map 12. Distribution of *V. melanops*.

Phenology: April - June **Chromosome number:** 10.
Geographical distribution: ALB, BGR, ESP, FRA, GRC, ITA, ROM, TUR, YUG.
Ecology: Alt. 150 - 1300 m; Hab. woodland and more rarely agricultural weed.

ii. *V. melanops* var. *loiseaui* Alleiz., Bull. Soc. Bot. Fr., 105: 360 (1958).
Phenology: March - May **Chromosome number:** N.A.
Geographical distribution: FRA, ITA.
Ecology: Woodland and as a weed in shaded areas of cultivation.

13. *V. ciliatula* Lipsky, Mem. de la Soc. des Natur. de Kiew 6(2): 46-47 (1891).
 Fl. Tur., 3: 307-308; Fl. USSR., 13: 471-472. Figure 3.5.

Phenology: May - July **Chromosome number:** 10.
Geographical distribution: SUN, TUR. Map 13.
Ecology: Alt. 15 - 2000 m; Hab. cultivated fields, meadows and the edges of woodland.

14. *V. anatolica* Turrill, Kew Bull., 1: 8 (1927). Fl. Iran., 43; Fl. Tur., 3: 313; Fl. USSR., 13: 470; Illust. Fl. Iran., Tab. 32, fig. 2.



Map 13. Distribution of *V. ciliatula*.

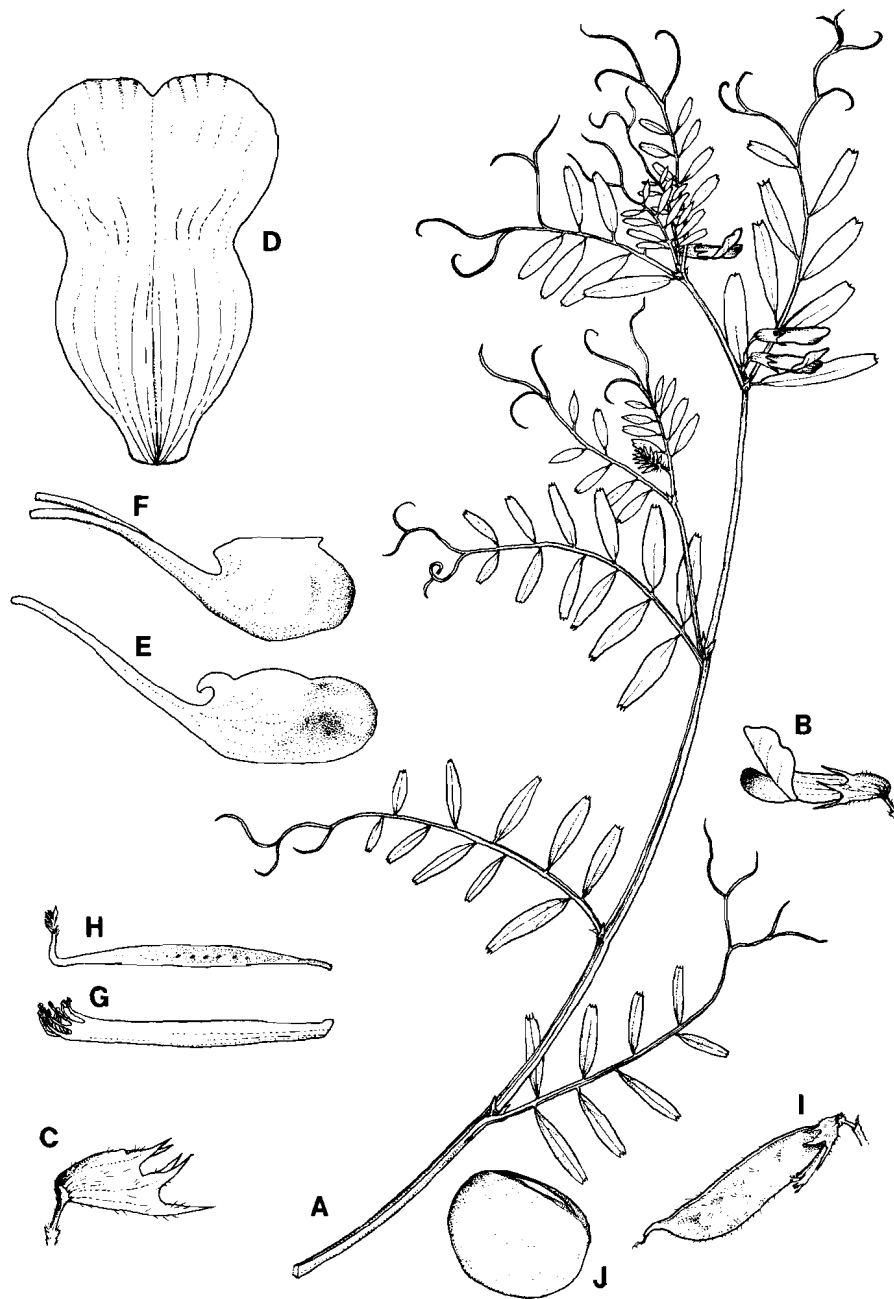


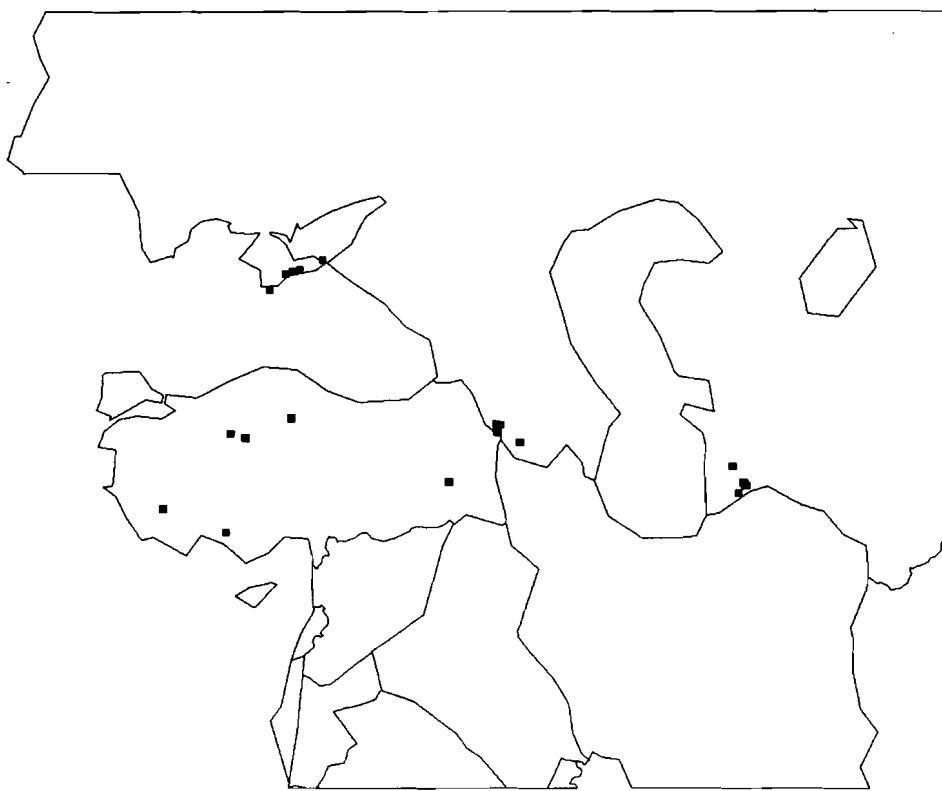
Figure 3.5. *Vicia ciliatula*: A habit x 0.5; B flower x 1; C calyx x 3; D standard petal x 3; E wing petal x 3; F keel petal x 3; G stamen x 3; H ovary, style and stigma x 3; I fruit x 1; J seed x 3. A - H and J from Maxted 6645, I from Maxted 6604.

Phenology: April - July

Chromosome number: 10.

Geographical distribution: IRN, SUN, TUR, Map. 14

Ecology: Alt. 800 - 2000 m; Hab. distributed land, orchards and mountain pasture.



Map 14. Distribution of *V. anatolica*.

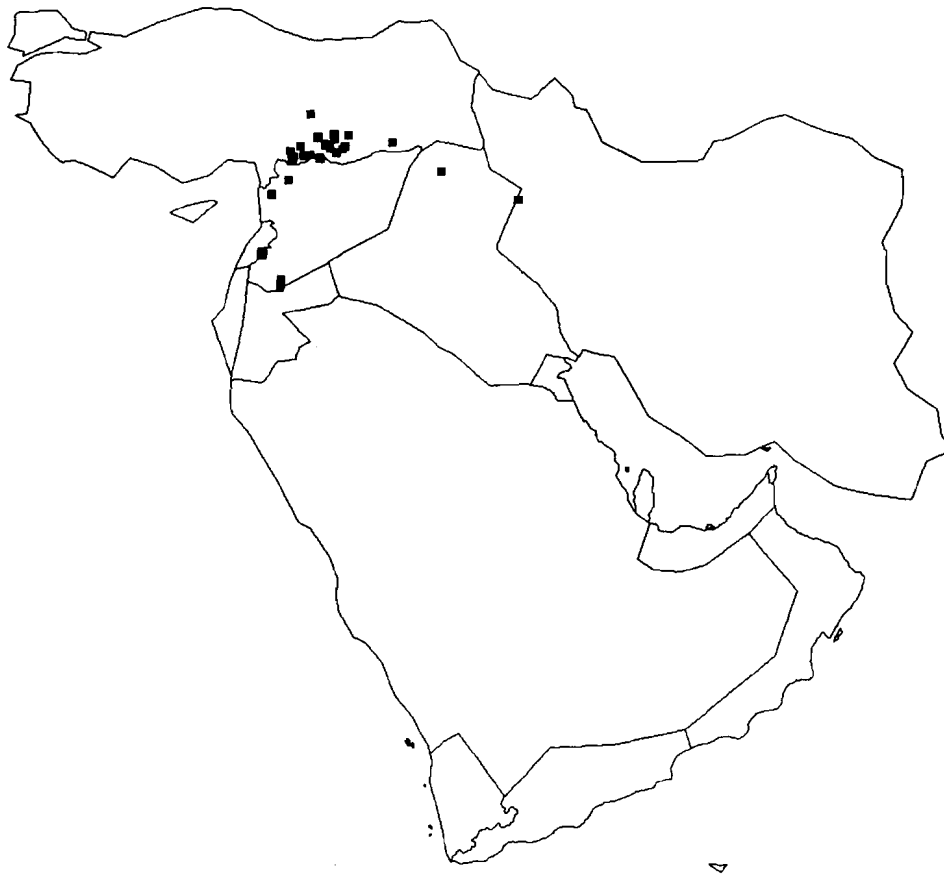
15. *V. mollis* Boiss. & Hausskn. ex Boiss., Fl.Or. 2:576(1872). Fl. Iran., 46; Fl. Iraq, 3:530; Fl. Syr., 2:405; Fl. Tur., 3:312; Illust. Fl. Iran., Tab. 33, fig. 2; Fl. Iraq, 3:531. Figure 3.6.

Phenology: March - May

Chromosome number: 10, (14).

Geographical distribution: IRQ, IRN, LBN, SYR, TUR. Map 15.

Ecology: Alt. 400 - 1430 m; Hab. agricultural and disturbed land.



Map 15. Distribution of *V. mollis*.

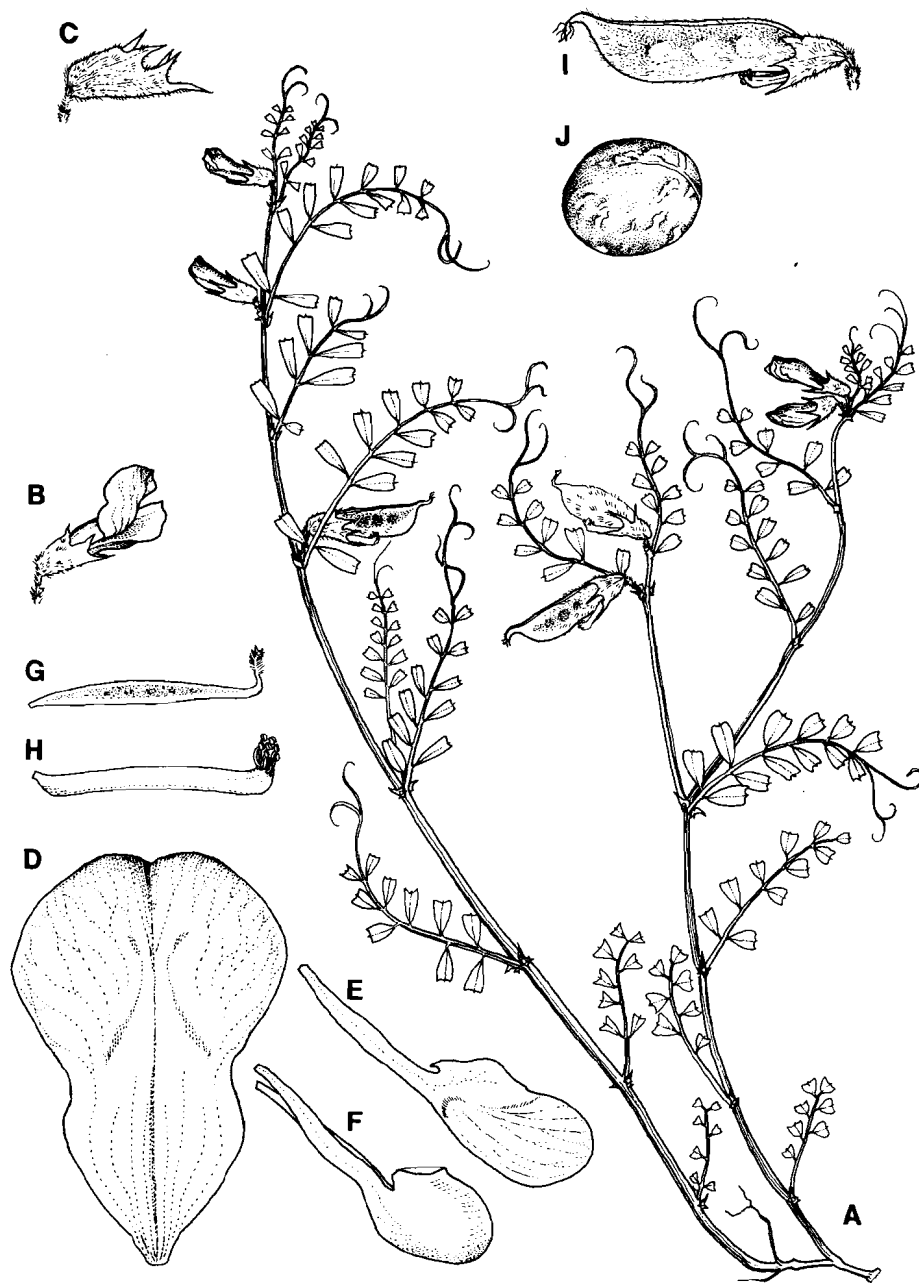


Figure 3.6. *Vicia mollis*: A habit x 0.5; B flower x 1; C calyx x 1.5; D standard petal x 3; E wing petal x 3; F keel petal x 3; G stamen x 3; H ovary, style and stigma x 3; I fruit x 1; J seed x 1.5. A - H and J from Maxted 5125, I from Maxted 5031.

16. *V. pannonica* Crantz, Strip. Austr. 2(5):393(1769). Fl. Eur., 2:134; Fl. Iran., 33-34; Fl. Tur., 3:314; Fl. USSR., 13:470-471; Illust. Fl. Iran., Tab. 27, fig.2.

Phenology: May - July

Chromosome number: 12.

Geographical distribution: ALB, AUT, BEL, BGR, CHE, CSK, CYP, DEU, DZA, ESP, FRA, GRC, HUN, IRN, ITA, MAR, ROM, SUN, TUR, YUG.
Map 16.

Ecology: Alt. 15 - 2200 m; Hab. disturbed and agricultural land.

i *V. pannonica* subsp. *striata* (M. Bieb.) Nyman, Consp. Fl. Europaea, 209 (1878). Fl. Eur., 2: 134; Fl. Tur., 3: 314.

Phenology: April - July

Chromosome number: 12.

Geographical distribution: ALB, AUT, BEL, BGR, CHE, CSK, CYP, DEU, DZA, ESP, FRA, GBR, GRC, HUN, IRN, ITA, ROM, SWE, SUN, SYR, TUR, YUG.

Ecology: Alt. 350-1250 m; Hab. disturbed and agricultural land.



Map 16. Distribution of *V. pannonica*.

ii *V. pannonica* subsp. *pannonica* Crantz, Strip. Austr. 2 (5):393-394 (1769). Fl. Eur., 2: 134; Fl. Tur., 3: 314.

Phenology: May-July **Chromosome number:** 12.

Geographical distribution: CSK, DEU, DZA, GRC, HUN, IRN, ITA, ROM, SUN, TUR, YUG.

Ecology: Alt. 15-2200 m; Hab. disturbed and agricultural land.

17. *V. hybrida* L., Sp. Pl. 2: 737 (1753). Fl. Eur., 2: 135; Fl. Iran., 42; Fl. Iraq, 3: 528-529; Fl. Pal., 2: 204-205; Fl. Syr., 2: 399; Fl. Tur., 3: 314-315; Fl. USSR., 13: 469-470; Illust. Fl. Iran., Tab.32, fig. 1; Fl. Pal., 2 (plates): 293.

Phenology: March-August **Chromosome number:** 12.

Geographical distribution: AFG, ALB, BGR, CYP, DZA, ESP, FRA, GRC, ISR, IRQ, IRN, ISL, ITA, JOR, LBN, LBY, ROM, SUN, SYR, TUR, YUG. Map 17.

Ecology: Alt. 2-1500 m; Hab. disturbed and undisturbed land, and open woodland.



Map 17. Distribution of *V. hybrida*.

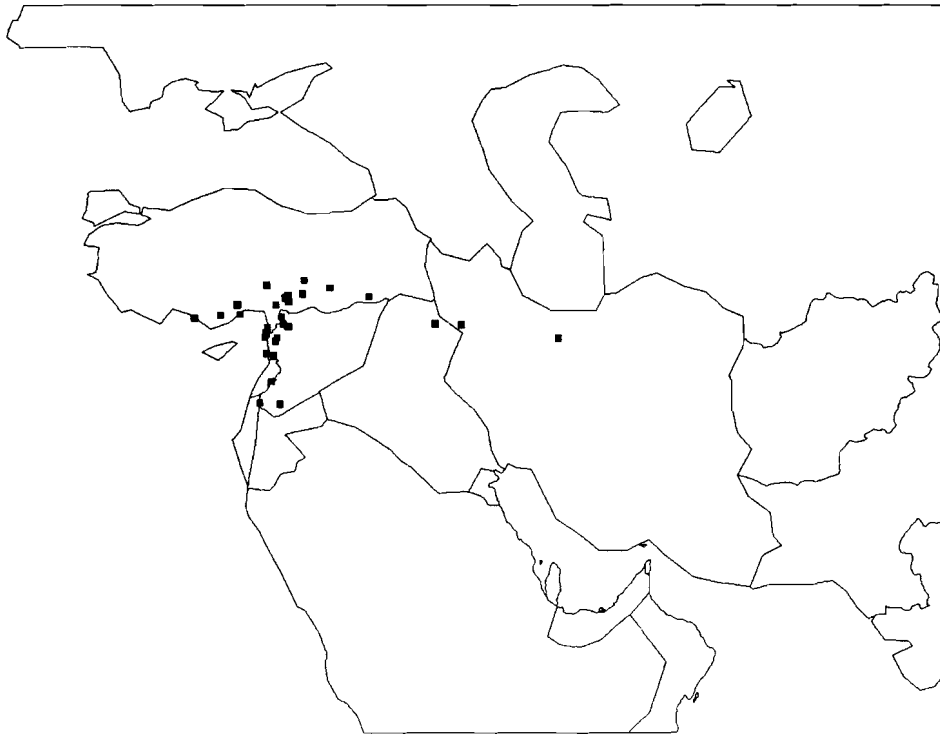
18. *V. sericocarpa* Fenzl, Pug. Pl. Sy. Tauri Occid., 4 (1842). Fl. Iran., 47-48; Fl. Iraq, 3: 529-530; Fl. Pal., 2: 204; Fl. Syr., 2: 400; Fl. Tur., 3: 312-313; Illust. Fl. Iran., Tab. 33, fig. 5; Fl. Pal., 2 (plates): 292.

Phenology: March-July

Chromosome number: 12.

Geographical distribution: CYP, ISR, IRQ, IRN, JOR, LBN, SYR, TUR. Map 18.

Ecology: Alt. 20-2000 m; Hab. disturbed and undisturbed land, limestone pavement.



Map 18. Distribution of *V. sericocarpa*.

19. *V. lutea* L., Sp. Pl., 2: 736 (1753). Fl. Eur., 2: 135; Fl. Iran., 48; Fl. Pal., 2: 203; Fl. Tur., 3: 311-312; Fl. USSR., 13: 468-469; Illust. Fl. Iran., Tab. 34, fig. 1.

Phenology: March-June

Chromosome number: 14.

Geographical distribution: ALB, BGR, CHE, DZA, EGY, ESP, FRA, GBR, GRC, HUN, ISR, IRN, ITA, JOR, LBN, LBY, MAR, PRT, ROM, SYR, SUN, TUN, TUR, UGA(I), YUG. Map 19.

Ecology: Alt. 5-2180 m; Hab. disturbed and agricultural land, and open woodland.



Map 19. Distribution of *V. lutea*.

i. *V. lutea* subsp. *lutea* L., Sp. Pl., 2: 736 (1753). Fl. Eur., 2: 135; Fl. Iran., 48; Fl. Pal., 2: 203; Fl. Tur., 3: 311; Illust. Fl. Iran., Tab. 34, fig. 1.

Phenology: March-June **Chromosome number:** 14.

Geographical distribution: ALB, BGR, CHE, DZA, EGY, ESP, FRA, GBR, GRC, HUN, IRN ITA, LBN, LB, MAR, PRT, ROM, SYR, SUN, TUN, TUR, UGA(I), YUG.

Ecology: Alt. 5-1100 m; Hab. disturbed and agricultural land, and open woodland.

ii. *V. lutea* subsp. *vestita* (Boiss.) Rouy, Fl. Fr. 5: 219 (1899). Fl. Eur., 2: 135; Fl. Iran., 48-49; Fl. Pal., 2: 203; Fl. Syr., 2: 399-400; Fl. Tur., 3: 311; Illust. Draw. Brit. Pl. 3: 65; Fl. Iran., Tab. 34, fig. 2; Fl. Pal., 2 (plates): 291.

Phenology: March-June **Chromosome number:** 14.

Geographical distribution: ALB, DZA, EGY, ESP, FRA, GBR, ISR, IRN JOR, LBN, LB, MAR, PRT, SUN, SYR, TUN, TUR, UGA(I), USA(I).

Ecology: Alt. 10-2180 m; disturbed and agricultural land, and open woodland.

3.2.4 Section *Peregrinae*

IV. Section *Peregrinae* Kupicha, Notes R.B.G. Edinburgh., 34: 323 (1976).

Annual; climbing or scrambling; stem slender. Stipules entire or semi-hastate; 1-4 x 1-4 mm; edge entire or with 1-2 teeth. Leaf 22-80 mm; apex tendrilous; 4-16 leaflets; leaflet 6-40 x 1-6 mm; symmetric; margins entire. Peduncle absent; with 1 flower. Calyx mouth oblique; lower tooth longer than upper; base gibbous; pedicel 1-3 mm. Flowers 9-24 mm; all petals approximately equal length; standard cream, blue or purple; shape platonychoid or stenonychoid; claw bowing present; upper standard surface glabrous. Wing marking absent; wing limb with slight basal folding. Legume 12-40 x 4-15 mm; oblong; round in cross-section; sutures curved; valves pubescent; hairs simple; septa absent; 2-7 seeds per legume. Seeds 3.5-6.5 x 3.5-9.5; round or oblong; laterally flattened or not laterally flattened; hilum less than quarter of seed circumference; lens positioned near hilum; testa surface smooth.

Number of taxa: three.

Chromosome number: 12, 14

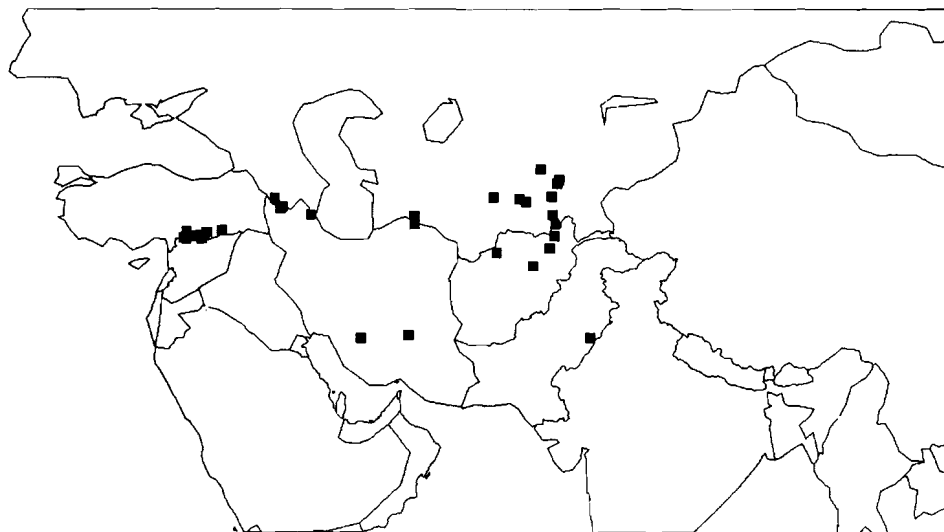
Geographical distribution: Mediterranean Basin, Crimea, Southwest Asia east to Afghanistan.

Geographical notes: The centre of diversity of sect. *Peregrinae* is focused on the fertile crescent countries of Southwest Asia. Two of the three species, *V. aintabensis* and *V. michauxii*, are restricted to this area, but *V. peregrina*

broadens the distribution of the section, as a whole, to Europe and North Africa.

Ecological notes: The three species are found in similar habitats, most commonly being found as weeds of cultivated annual crops of arid and semi-arid areas. The species do not show a preference for any particular soil types, they prefer open communities and cannot stand competition.

Taxonomic notes: Ponert (1973) used five subspecies to describe the variation seen in sect. *Peregrinae*. He included *V. aintabensis* and *V. michauxii* as subspecies of *V. peregrina* and resurrected two taxa commonly regarded as synonyms of these species. The three species are closely related and specific identification is difficult if the few good diagnostic characters are unrecordable. Plitmann (1967) states that intermediate forms between the three species are found in Northern Iraq and Southern Turkey. However, I have not seen specimens that show intermediacy and when the full data set is recordable I have had no problem in ascribing specimens to one of the three species recognized.



Map 20. Distribution of *V. michauxii*.

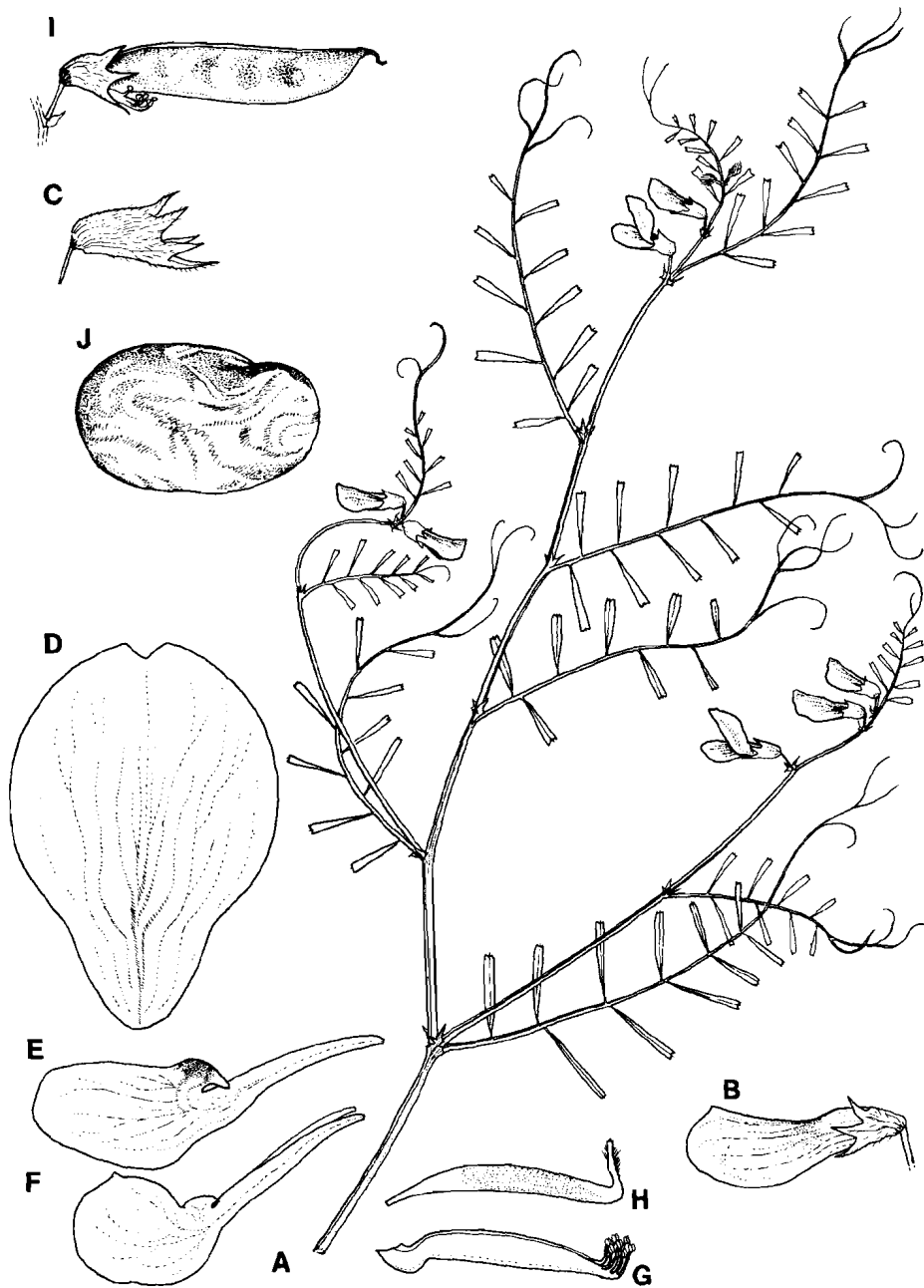


Figure 3.7. *Vicia michauxii*. A habit x 0.5; B flower x 1.5; C calyx x 2; D standard petal x 2; E wing petal x 2; F keel petal x 2; G stamen x 2; H ovary, style and stigma x 2; I fruit x 1; J seed x 3.5. A-H and J from Maxted 5252, I from Maxted 8130.

20. *V. michauxii* Sprengel, Mant. Fl. Halens.: 48 (1807). Fl. Iran., 45-46; Fl. Iraq, 3: 539-540; Fl. Syr., 2: 405; Fl. Tur., 3: 310-311; Fl. USSR., 13: 468; Illust. Fl. Iran., Tab. 33, fig. 1. Figure 3.7.

Phenology: March-September **Chromosome number:** (12), 14.

Geographical distribution: AFG, IRQ, IRN, LBN, SUN, SYR, TUR. Map 20

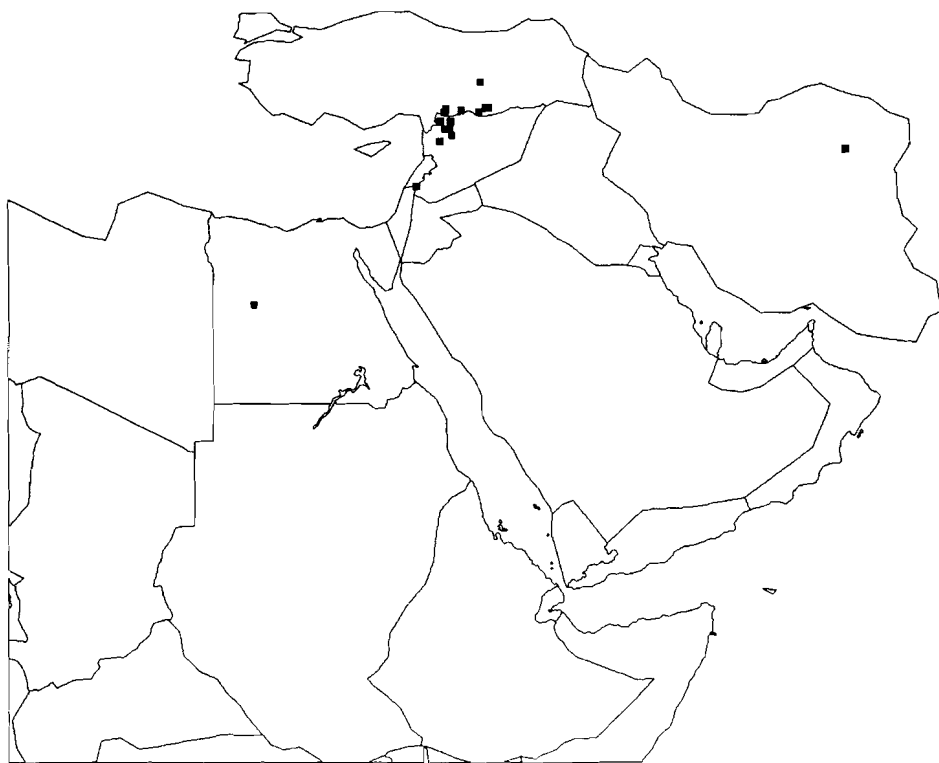
Ecology: Alt. 500-2650 m; Hab. dry agricultural and disturbed land.

21. *V. aintabensis* Boiss. & Hausskn. ex Boiss., Fl. Orient. 2: 577 (1872). Fl. Iran., 47; Fl. Syr., 2: 405; Fl. Tur., 3: 308; Illust. Fl. Iran., Tab. 33, fig. 4.

Phenology: April-July **Chromosome number:** 14.

Geographical distribution: EGY, IRQ, IRN, LBN, SYR, TUR. Map 21.

Ecology: Alt. 170-1600 m; Hab. dry agricultural and disturbed land, more rarely woodland edges.



Map 21. Distribution of *V. aintabensis*.

22. *V. peregrina* L., Sp. Pl., 2: 737 (1753). Fl. Eur., 2: 135; Fl. Iran., 49-50; Fl. Iraq, 3: 538-539; Fl. Pal., 2: 202-203; Fl. Syr., 2: 405-406; Fl. Tur., 3: 308-310; Fl. USSR., 13: 466-467; Illust. Fl. Iran., Tab. 34, fig. 3; Fl. Pal., 2 (plates): 290.

Phenology: February-July

Chromosome number: (12), 14.

Geographical distribution: AFG, ALB, BGR, CHE, CYP, DZA, EGY, ESP, FRA, GRC, HUN, ISR, IRQ, IRN, ITA, JOR, LBN, LBY, MAR, PAK, PRT, ROM, SAU, SUN, SYR, TUR, YUG. Map 22.

Ecology: Alt. 10-1450 m; Hab. dry agricultural and disturbed land.



Map 22. Distribution of *V. peregrina*

3.2.5 Section *Wiggersia*

V. Section *Wiggersia* (Alef.) Maxted, Kew Bull. 47(1): 129-130 (1991c).

Annual; scrambling; stem slender. Stipules entire or semi-hastate; 2-6.5 x 1-4 mm; edge entire or with 1-2 teeth. Leaf 3-48 mm; apex tendrilous; 2-12 leaflets per leaf; leaflet 2-23 x 1-9 mm; symmetric; margins entire. Peduncle 1-2 mm; with 1 flower. Calyx mouth straight; teeth subequal; base not gibbous; pedicel 1-2 mm. Flowers 5-15 mm; all petals approximately equal length; standard cream, blue or purple; shape stenonychioid; claw bowing absent; upper standard surface glabrous. Wing marking absent; wing limb without basal folding. Legume 13-35 x 3-5 mm; linear; round in cross section or laterally flattened; sutures parallel or curved; valve glabrous or pubescent; hairs simple; septa absent; 4-8(-12) seeds per legume. Seeds 1.5-3.5 x 1-3 mm; round; not laterally flattened or laterally flattened; hilum less than quarter of seed circumference; lens positioned near hilum; testa surface rough.

Number of taxa: two.

Chromosome number: 10, 12.

Geographical distribution: Europe, West Asia and Algeria.

Geographical notes: The two species of sect. *Wiggersia* have a centre of diversity in Southwest Asia. *V. cuspidata* is restricted to Southeast Europe and Southwest Asia and *V. lathyroides* broadens the distribution of the section, as a whole, to include North Africa and Western Europe.

Ecological notes: The two species of this section are usually found in grazed grassland, among rocks or more rarely on the margins of cultivation. They are commonly found in semi-shaded areas of temperate or semi-arid regions. No particular soil preference has been noted. They do not respond well to competition from surrounding plants (probably due to their relatively small stature).

Taxonomic notes: These two species have been considered closely allied by numerous authors (Alef. 1861a; Boissier 1872; Plitmann 1967; Ball 1968; Kupicha 1976; Chrtkova-Zertova 1979). They were included with *V. lutea*, *V. sepium* and *V. sylvatica* in the genus *Wiggersia* by Gaertner *et al.* (1801), but the name was not validly published. Alefeld (1861a) took up the name, but used a different conception that included *V. lathyroides* and *V. cuspidata* alone and thus the name is used here to encompass the same group. The two species are united by their small habit, much reduced peduncle, linear legume and their sculptured seed testa.

23. *V. cuspidata* Boiss., Diagn. Ser. 1(2): 104 (1843). Fl. Eur., 2: 135; Fl. Iran., 55; Fl. Pal., 2: 205; Fl. Syr., 2: 404; Fl. Tur., 3: 317; Illust. Fl. Iran., Tab. 35, fig. 5; Fl. Pal., 2 (plates): 294. Figure 3.8.

Phenology: April-June

Chromosome number: 12.

Geographical distribution: CYP, GRC, ISR, IRN, JOR, LBN, SYR, TUR. Map 23.

Ecology: Alt. 120-1550 m Hab. disturbed and undisturbed land, and open woodland.

Taxonomic notes: Plitmann (1967) notes that a few specimens of *V. cuspidata* from Turkey (Thracia and Lydia) show some degree of intermediacy with *V. lathyroides*. Having collected fresh material of both species and not having encountered any specimens showing intermediacy, I am in no doubt that the specific distinction should be retained.



Map 23. Distribution of *V. cuspidata*.

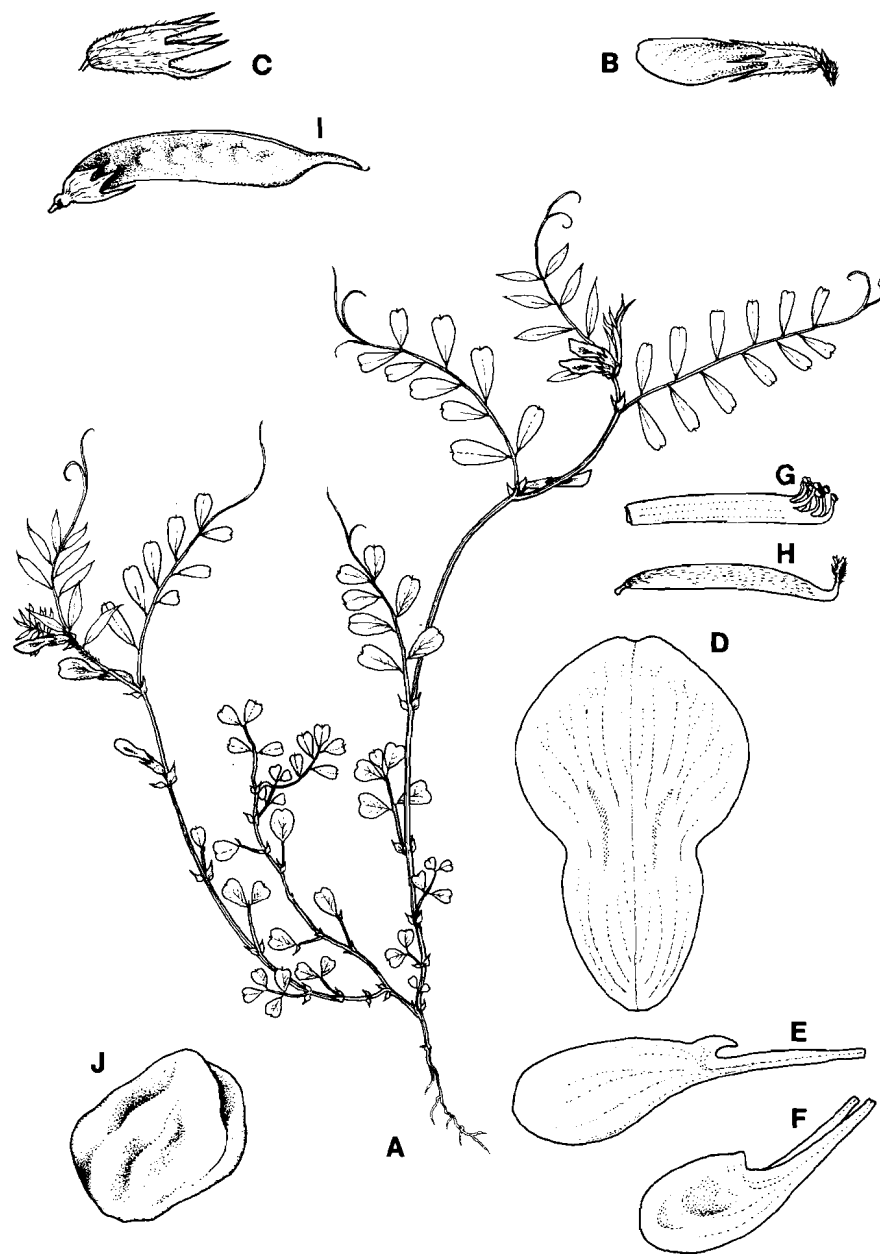


Figure 3.8. *Vicia cuspidata*: A habit x 0.5; B flower x 2; C calyx x 3; D standard petal x 4; E wing petal x 4; F keel petal x 4; G stamen x 4; H ovary, style and stigma x 4; I fruit x 1; J seed x 5. A-H and J from Maxted 2428, I from Maxted 2286 and 2380.

24. *V. lathyroides* L., Sp. Pl., 2: 736 (1753). Fl. Eur., 2: 135; Fl. Iran., 54-55; Fl. Iraq, 3: 538; Fl. Syr., 2: 404; Fl. Tur., 3: 317-318; Fl. USSR., 13: 457-458; Illust. Draw. Brit. Pl., 3: 67; Fl. Iran., Tab. 35, fig. 4.

Phenology: March-August

Chromosome number: (10), 12.

Geographical distribution: ALB, AUT, BEL, BGR, CAN(I), CHE, CSK, CYP, DEU, DEU, DNK, DZA, ESP, FIN, FRA, GBR, GRC, HUN, IRL, ISR, IRQ, IRN, ITA, JOR, LBN, MAR, NLD, NOR, POL, PRT, ROM, SWE, SUN, SYR, TUR, USA(I), YUG. Map 24.

Ecology: Alt. 10-1500 m; Hab. lawn and grazed pasture weed, open woodland and disturbed land.



Map 24. Distribution of *V. lathyroides*.

3.2.6 Section *Vicia*

VI. Section *Vicia* L., Sp. Pl. 736 (1753). Fl. Eur., 2: 134; Fl. Iran., 41; Fl. Iraq, 3: 528; Fl. Pal., 2: 202; Fl. Tur., 3: 303; Fl. USSR., 13: 453.

Annual or perennial; climbing; stem slender. Stipules entire or semi-hastate or semi-sagittate; 2.5-12 x 1-11 mm; edge entire or with 1-8 teeth. Leaf 12-84 mm; apex tendrilous; 4-18 leaflets per leaf; leaflets 7-38 x 1-15 mm; symmetric; margins entire, serrate or incised. Peduncle 1-13 mm; with 1-4 flowers. Calyx mouth straight; teeth subequal; base not gibbous; pedicel 1-4 mm. Flowers 10-33 mm; all petals approximately equal length; standard cream, yellow, blue or purple; shape stenonychioid; claw bowing absent; upper standard surface glabrous. Wing marking absent; wing limb with slight or strong basal folding. Legume 6-70 x 4-12 mm; linear or rectangular; round in cross section or laterally flattened; sutures straight; valves glabrous or pubescent; hairs simple; septa absent or present; 1-14 seeds per legume. Seeds 2-7 x 2-7 mm; round; laterally flattened or not laterally flattened; hilum less than quarter of seed circumference or over half of seed circumference; lens positioned near hilum; testa surface smooth.

Number of taxa: 12

Chromosome number: 10, 12, 14.

Geographical distribution: Europe, North Africa, and West and North Asia.

Geographical notes: Sect. *Vicia* is composed of five species, one of which is the pan-temperate and semi-tropical weed, *V. sativa*. The other four species of the section are geographically restricted. The centre of distribution of the section is Southeast Europe and Southwest Asia, with two restricted species (*V. pyrenaica* and *V. qatmensis*) forming isolated endemic distributions in the Iberian Peninsular and Syria respectively. The discontinuous distribution of these four species could suggest that they have each evolved separately from a *V. sativa*-like form.

Ecological notes: The section includes one of the most common temperate weeds, the common vetch, which can be found in numerous diverse habitats, though it is most commonly found in open, disturbed areas rather than closed, shaded communities. The other four species are more selective. *V. pyrenaica* is restricted to alpine meadows over 1000 m in the Pyrenees and Sierra Nevada ranges in France and Spain and the remaining three species prefer shaded areas of open woodland or are found along hedgerows. While *V. sativa* has some resistance to grazing, the other species are more susceptible. The species do not show an obvious preference for particular soils.

Taxonomic notes: Section *Vicia* is split into two series. *V. grandiflora* was first distinguished from the *V. sativa* aggregate by Alefeld (1861b), who created the monospecific genus *Cujunia*. The need for a discrete taxon for *V. grandiflora* was also seen by Fedtschenko (1948). He referred to the unit as ser. *Grandiflorae*, but he did not validly publish the name. Radzhi (1971) finally

published the taxon as ser. *Grandiflorae*. The two species of ser. *Grandiflorae* are distinguished from ser. *Vicia* by corolla colour, corolla size, legume shape, legume size and the relative lengths of the seed hilum to its circumference.

A. Series *Vicia* L., Sp. Pl. 736 (1753). Fl. Eur., 2: 134; Fl. Iran., 41; Fl. Iraq, 3: 528; Fl. Pal., 2: 202; Fl. Tur., 3: 303; Fl. USSR., 13: 453.

Number of taxa: nine.

Chromosome number: 10, 12, 14.

Geographical distribution: Europe, North Africa, and West and North Asia.

Taxonomic notes: The series contains the polymorphic, pan-temperate *V. sativa* and the other two species, *V. pyrenaica* and *V. barbazitae*, can be seen as extreme forms of *V. sativa*.

25. *V. pyrenaica* Pourret, Act. Toulouse Mem. 3: 333 (1788). Fl. Eur., 2: 134.

Phenology: June-August

Chromosome number: 14.

Geographical distribution: ESP, FRA. Map 25.

Ecology: Alt. 1100-2400 m; Hab. alpine pasture.



Map 25. Distribution of *V. pyrenaica*.

26. *V. sativa* L., Sp. Pl. 2: 736 (1753). Fl. Eur., 2: 134; Fl. Iran., 50-51; Fl. Iraq, 3: 534-535; Fl. Pal., 2: 205; Fl. Syr., 2: 403; Fl. Tur., 3: 318-321; Fl. USSR., 13: 460-463.

Phenology: February-November **Chromosome number:** (10), 12, (14).

Geographical distribution: AFG, ALB, ARG(I), AUT, AUS(I), BEL, BGR, BRA(I), CAN(I), CHE, CHL(I), CHN, CSK, CYP, CUB(I), DEU, DNK, DZA, ECU, EGY, ESP, ETH, FIN, FRA, GBR, GRC, HUN, IRL, ISR, IND, IRQ, IRN, ITA, JPN, JOR, KEN(I), LBN, LE, LBY, MAR, MRT, MUS(I), MEX(I), NLD, NOR, NPL, NZL(I), POL, PAK, PRT, ROM, SAU, SWE, SOM, SUN, SYR, TUN, TUR, USA(I), YUG. Maps 26a, b, and c.

Ecology: Alt. 1-2900 m; Hab. common pan-temperate and semi-tropical weed, agricultural and disturbed land, margins of woodland.

Taxonomic notes: *V. sativa* is the most ubiquitous and polymorphic species of *Vicia*. Numerous recent workers, e.g. Hanelt & Mettin (1964, 1966), Plitmann (1967), Davis & Plitmann (1970), Hollings & Stace (1974, 1978), Stankevich (1978b) and Potokina (in prep.) have reported detailed morphological studies of the *V. sativa* aggregate and each has proposed a novel classification of the included supra-specific taxa. A detailed review of the existing knowledge, complemented by targeted research to fill existing knowledge gaps, is required to provide a clear statement about *V. sativa* infra-specific taxonomy.

i. *V. sativa* subsp. *nigra* (L.) Ehrh., Hannover. Mag. 15: 229 (1780). Fl. Eur., 2: 134; Fl. Iran., 52-53; Fl. Iraq, 3: 536-537; Fl. Pal., 2: 206-207; Fl. Syr., 2: 403; Fl. Tur., 3: 319-320; Fl. USSR., 13: 464; Illust. Draw. Brit. Pl., 3: 66; Fl. Iran., Tab. 35, fig. 1.

Phenology: February-November **Chromosome number:** (10), 12, (14).

Geographical distribution: AFG, ALB, ARG(I), AUT, AUS(I), BEL, BGR, BRA(I), CAN(I), CHE, CHL(I), CHN, CSK, CYP, CUB(I), DEU, DNK, DZA, ECU, EGY, ESP, ETH, FIN, FRA, GBR, GRC, HUN, IRL, ISR, IND, IRQ, IRN, ITA, JPN, JOR, KEN(I), LBN, LE, LBY, MAR, MRT, MUS(I), MEX(I), NLD, NOR, NPL, NZL(I), POL, PAK, PRT, ROM, SAU, SWE, SOM, SUN, SYR, TUN, TUR, USA(I), YUG.

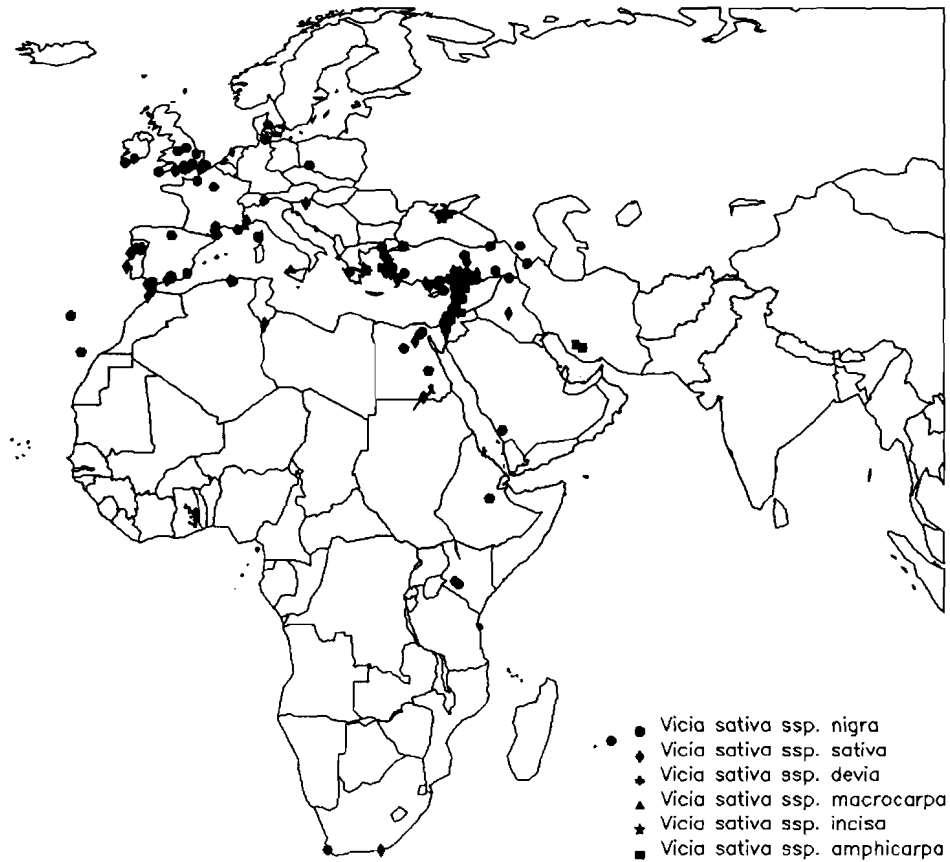
Ecology: Alt. 1-2900 m; Hab. common pan-temperate and semi-tropical weed, agricultural and disturbed land, margins of woodland.

Taxonomic notes: The most widespread of all the *V. sativa* subspecies, the common weedy vetch.

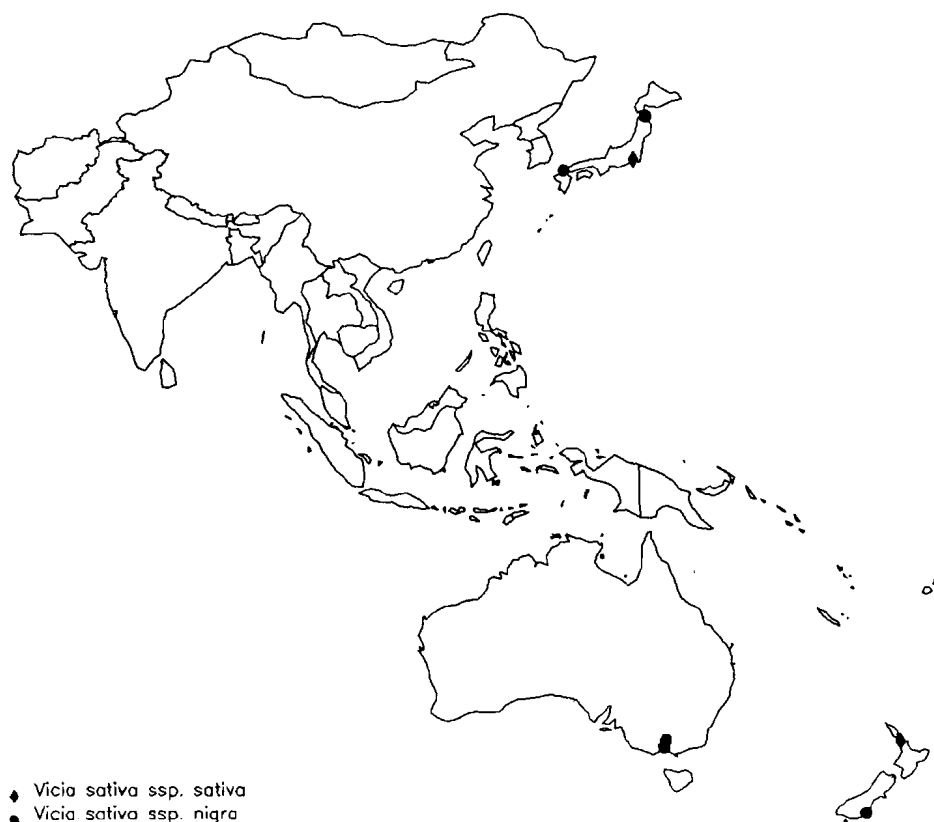
ii. *V. sativa* subsp. *amphicarpa* (L.) Batt. in Batt. & Trabut, Fl. Algerie, 1: 268 (1889). Fl. Eur., 2: 134; Fl. Iran., 53-54; Fl. Iraq, 3: 537-538; Fl. Pal., 2: 207; Fl. Syr., 2: 403-404; Fl. Tur., 3: 321; Fl. USSR., 13: 465; Fl. Iran., Tab. 35, fig. 2.



Map 26a. Distribution of *V. sativa* in the Americas.



Map 26b. Distribution of *V. sativa* in Europe, Africa and West Asia.



Map 26c. Distribution of *V. sativa* in East Asia and Australasia.

Phenology: March-August

Chromosome number: 10, 12, 14.

Geographical distribution: AFG, ALB, AUS(I), BEL, CSK, CYP, ESP, FRA, GRC, ISR, IRQ, IRN, ITA, JOR, LBN, LB, MRT, PRT, ROM, SUN, SYR, TUR, YUG.

Ecology: Alt. 20-2000 m; Soils, calcic brown, calcic brown & terra rossa, chalky calcic brown, chalky white, heavy black, terra rossa; Hab. dry disturbed or agricultural land.

Taxonomic notes: This subspecies has potential as a forage plant for dry areas. The amphicarpic pods are resistant to grazing and so regeneration of pasture following grazing is high (Fabre 1855; Ascherson 1884; Plitmann 1973; ICARDA 1987).

iii. *V. sativa* subsp. *incisa* (M. Bieb.) Arcang., Comp. Fl. Italiana, 201 (1882). Fl. Eur., 2: 135; Fl. Tur., 3: 320; Fl. USSR., 13: 463.

Phenology: April-June

Chromosome number: 14.

Geographical distribution: BGR, DZA, GRC, LB, MAR, PRT, SUN, TUR, YUG.

Ecology: Alt. 10-510 m; Hab. disturbed land associated with woodland.

iv. *V. sativa* subsp. *devia* J.G. da Costa, Boletim do Museu Municipal do Funchal, III(7): 62 (1948). Fl. Madeira (in press).

Phenology: N.A.

Chromosome number: N.A.

Geographical distribution: PRT (endemic to Madeira).

Ecology: N.A.

v. *V. sativa* L., Sp. Pl., 2: 736 (1753). subsp. *sativa*. Fl. Eur., 2: 135; Fl. Iran., 51; Fl. Iraq, 3: 535-536; Fl. Pal., 2: 206; Fl. Tur., 3: 319; Illust. Fl. Iran., Tab. 34, fig. 4; Fl. Pal., 2 (plates): 295.

Phenology: January-December

Chromosome number: 10, 12.

Geographical distribution: AFG, ALB, AUS(I), BEL, BGR, CAN(I), CHE, CHL(I), CHN, CSK, CYP, CUB(I), DEU, DZA, ECU, EGY, ESP, ETH, FRA, GBR, GRC, HUN, IRL, ISR, IND, IRQ, IRN, ITA, JPN, JOR, KEN(I), LBN, LE, LB, MAR, MRT, MUS(I), MEX(I), NLD, NZL(I), POL, PAK, PRT, ROM, SAU, SOM, SUN, SYR, TUN, TUR, USA(I), YUG.

Ecology: Alt. 10-2100 m; Hab. minor forage crop of the Middle East. Agricultural and disturbed land, margins of woodland.

Taxonomic notes: This subspecies is grown, both as a fodder and forage plant, in Europe, North Africa and West Asia. ICARDA are promoting the use of *V. sativa* subsp. *sativa* as a replacement for fallow in the traditional barley-fallow rotation (ICARDA 1988).

vi. *V. sativa* subsp. *macrocarpa* (Moris) Arcang., Comp. Fl. Italiana, 201 (1882). Fl. Eur., 2: 135; Fl. Tur., 3: 320-321.

Phenology: May-June

Chromosome number: 10, 12.

Geographical distribution: ALB, BGR, DZA, ESP, FRA, GRC, ITA, LBY, MAR, PRT, TUR, YUG.

Ecology: Alt. 45-200 m; Hab. agricultural and woodland margins.

27. *V. barbazitae* Ten. & Guss., Mem. Sulle Peregr., 165 (1838). Fl. Eur., 2: 134; Fl. Tur., 3: 315. Figure 3.9.

Phenology: April-July

Chromosome number: N.A.

Geographical distribution: BGR, FRA, DEU, GRC, ITA, TUR, YUG. Map 27.

Ecology: Alt. 340-2100 m; Hab. woodland and margins of cultivation.

i. *V. barbazitae* var. *barbazitae* Ten. & Guss., Mem. Sulle Peregr., 165 (1838).

Phenology: April-June

Chromosome number: 14.

Geographical distribution: BGR, FRA, DEU, GRC, ITA, TUR, YUG.

Ecology: Alt. 340-2100 m; Hab. woodland and woodland margins.

ii. *V. barbazitae* var. *incisa* (Orph.) Boiss., Fl. Or., 2: 574 (1872).

Phenology: May-June

Chromosome number: 14.

Geographical distribution: AUT, GRC, TUR.

Ecology: Alt. 550-1150 m; Hab. open woodland and meadows.

B. Series *Grandiflorae* B. Fedtsch. ex Radzhi, Novosti Sist. Vyssh. Rast., 7: 236 (1971). Fl. USSR., 13: 349.

Number of taxa: three.

Chromosome number: 12, 14.

Geographical distribution: Southeast Europe and West Asia.

Taxonomic notes: Series *Grandiflorae* contains two closely allied species: *V. grandiflora* and *V. qatmensis*. The latter is an endemic of Western Syria and following its description was not incorporated into any of the major classifications of *Vicia*. However, having collected this species I consider the specific distinction from *V. grandiflora* is warranted. The two species are distinguished from *Vicia sensu stricto* by their yellow to cream coloured corolla, the corolla size, the laterally flattened but broader legume and the seed hilum being more than half the seed circumference.

28. *V. qatmensis* Gomb., Notulae systematicae, 14(2): 109 (1951). Fl. Syr., 2: 401. Figure 3.10.

Phenology: March-May

Chromosome number: 14.

Geographical distribution: SYR (endemic), see Map 28.

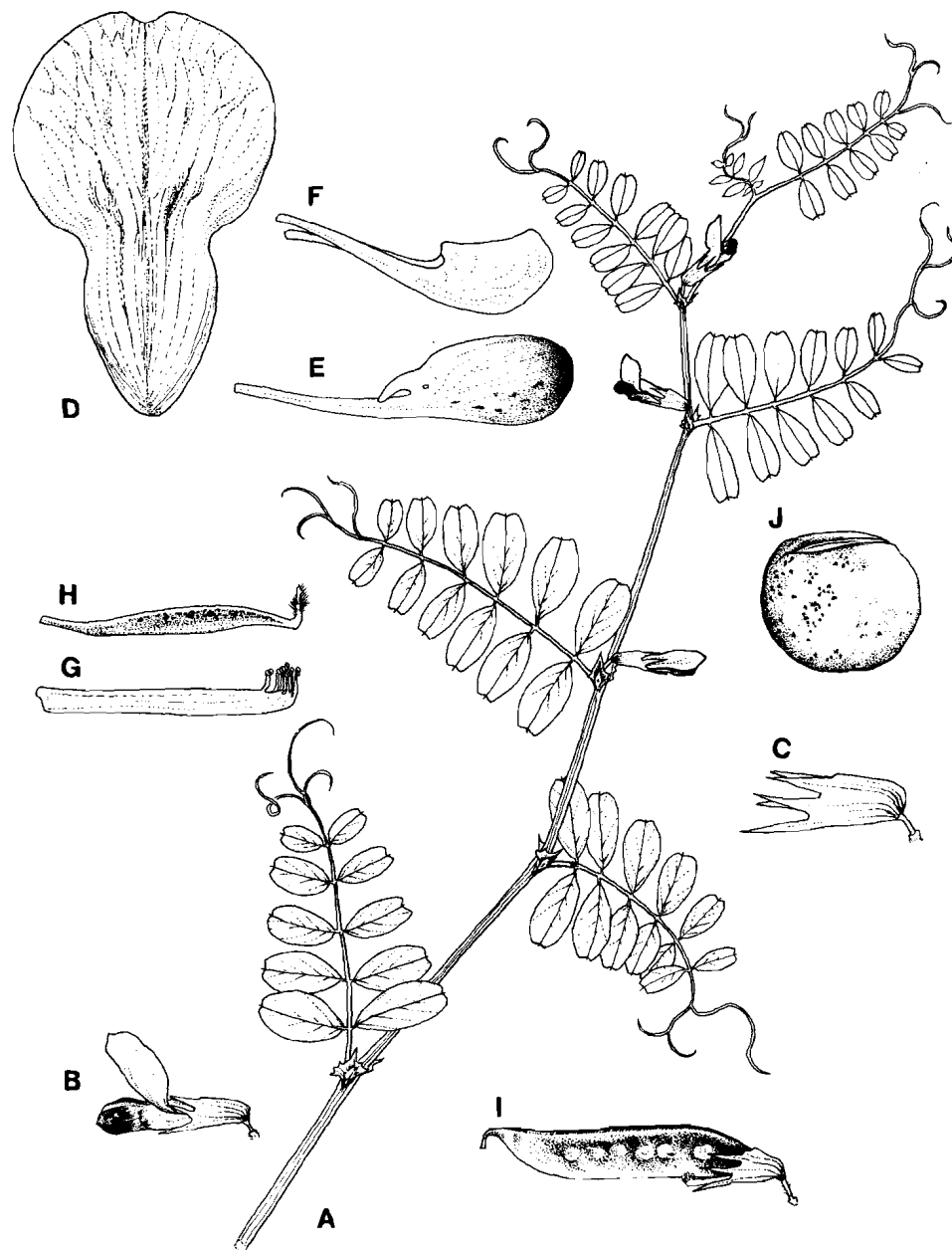


Figure 3.9. *Vicia barbazitae*: A habit x 0.5; B flower x 1; C calyx x 2; D standard petal x 2; E wing petal x 2; F keel petal x 2; G stamen x 2; H ovary, style and stigma x 2; I fruit x 1; J seed x 5. A-H and J from Maxted 4317, I from Maxted 4429.



Map 27. Distribution of *Vicia barbazitae*.

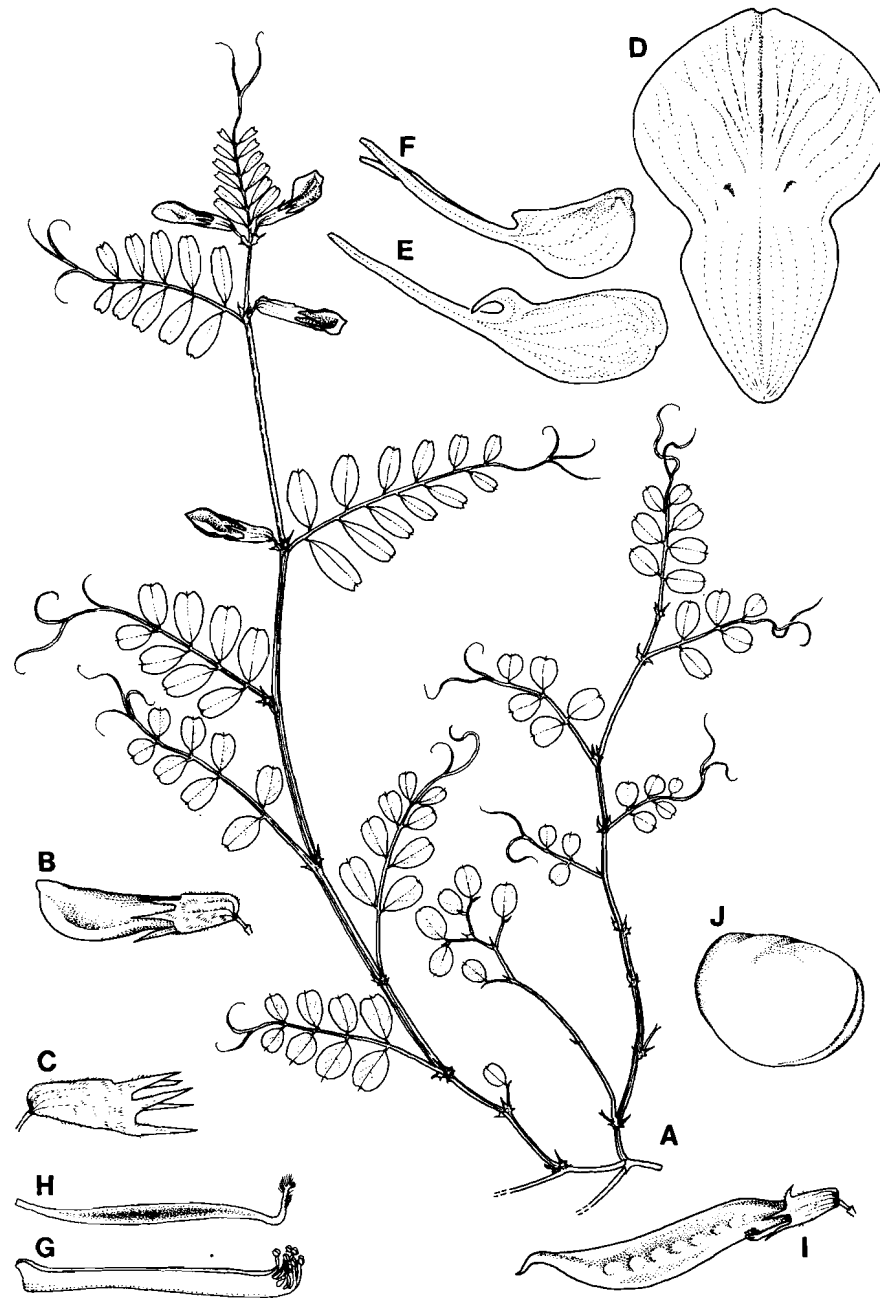
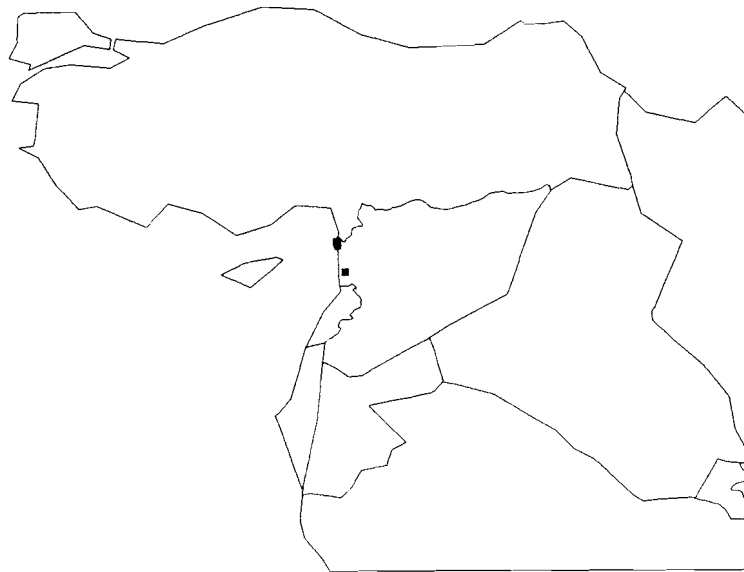


Figure 3.10. *Vicia qatmensis*: A habit x 0.5; B flower x 1; C calyx x 2; D standard petal x 1.5; E wing petal x 1.5; F keel petal x 1.5; G stamen x 1.5; H ovary, style and stigma x 1.5; I fruit x 1; J seed x 5. A-H and J from Maxted 2061, I from Maxted 2066.



Map 28. Distribution of *V. qatmensis*.

Ecology: Alt. 470-1040 m; Soil, Calcic brown & terra rossa, Woodland brown;
Hab. woodland and coppice margins.

Taxonomic notes: This rare taxon has been located at two sites in Northwestern Syria; near the type location at Masiaf and in the gorge to the West of Kessab on the Turkish-Syrian border.

29. *V. grandiflora* Scop., Flora Carnolica, 2: 65 (1772). Fl. Eur., 2: 134; Fl. Iran., 54; Fl. Pal., 2: 205; Fl. Tur., 3: 315-316; Fl. USSR., 13: 459-460; Illust. Fl. Iran., Tab. 35, fig. 3.

Phenology: March-August

Chromosome number: (12), 14.

Geographical distribution: AFG, ALB, AUS(I), BGR, CAN(I), CSK, GRC, HUN, IRQ, IRN, ITA, POL, ROM, SUN, TUR, YUG, USA(I). Map 29.

Ecology: Alt. 200-1200 m; Hab. woodland, woodland margin and disturbed land.

i. *V. grandiflora* var. *grandiflora* Scop., Flora Carnolica, 2: 65 (1772). Fl. Tur., 3: 316.

Phenology: March-July

Chromosome number: 14.

Geographical distribution: AUT, GRC, HUN, ITA, POL, ROM, SUN, TUR,



Map 29. Distribution of *V. grandiflora*.

USA(I), YUG.

Ecology: Alt. 200-1200 m; Hab. woodland, woodland margin and disturbed land.

ii. *V. grandiflora* var. *incisa* Braun & Bouche, App. Spec. Nov. et Minus Cognitarum, 22 (1853). Fl. Tur., 3: 316.

Phenology: May-August

Chromosome number: N.A.

Geographical distribution: GRC, TUR, YUG.

Ecology: Alt. 340-1000 m; Hab. woodland and woodland margins.

3.2.7 Section *Bithynicae*

VII Section *Bithynicae* (B. Fedtsch. ex Radzhi) Maxted, Kew Bull. 47(1): 129-130 (1991c). Fl. USSR., 13: 472.

Annual; climbing; stem slender. Stipules semi-sagittate; 4-26 x 2-16 mm; edge with 3-8 teeth. Leaf 12-67 mm; apex tendrilous; 2-6 leaflets per leaf; leaflet 10-70 x 2-31 mm; symmetric; margins entire. Peduncle 1-69 mm; with 1-2 flowers. Calyx mouth straight; teeth subequal; base not gibbous; pedicel 1-5 mm. Flowers 11-22 mm; all petals approximately equal length; standard blue or purple; shape stenonychioid; claw bowing absent; upper standard surface glabrous. Wing marking absent; wing limb with slight basal folding. Legume 23-47 x 6-11 mm; rhomboid; laterally flattened; sutures parallel; valves pubescent; hairs tuberculate (with basal swelling); septa present; 2-7 seeds per legume. Seeds 2-4.5 x 2-4 mm; round; not laterally flattened; hilum less than quarter of seed circumference; lens positioned near hilum; testa surface smooth.

Number of taxa: one.

Chromosome number: 14.

Geographical distribution: Central, Southern Europe and the Mediterranean Basin.

Ecological notes: The single species of this section, *V. bithynica*, is most commonly associated with dry and open disturbed habitats. In Britain it is always found on sandy areas near the sea and this preference for sandy soils seems to hold throughout its range. In the Middle East it is more commonly found growing as a weed in cereals or vineyards. It does not appear to stand shading or strong competition from other plants.

Taxonomic notes: The distinct nature of *V. bithynica* within subgenus *Vicia* was noted as early as 1836 by Koch, who placed the species in a monospecific subsectional grouping. Subsequently, it has been included with the *V. narbonensis* complex species, with sect. *Vicia* species or placed with the *V. cracca*-related species. The radical difference of opinion between specialists on the placement of *V. bithynica* within *Vicia* seems likely to result from the relative importance given to peduncle length as a group-defining character

in the various classifications. *V. bithynica* has the overall features of *Vicia* subgenus *Vicia sensu* Kupicha (1976), but the peduncle is often longer than the flower which makes it the exception in a group where the flowers are otherwise sessile to subsessile. *V. bithynica* has historically most commonly been linked with the *V. narbonensis* complex, with which it shares the diagnostic large, serrate-edged stipule.

30. *V. bithynica* (L.) L., Syst. Nat., ed. 10(2): 1166 (1759). Fl. Eur., 2: 135; Fl. Pal., 2: 207-208; Fl. Syr., 2: 410; Fl. Tur., 3: 321; Fl. USSR., 13: 472-473; Illust. Draw. Brit. Pl., 3: 68; Fl. Pal., 2 (plates): 296.

Phenology: March-August

Chromosome number: 14.

Geographical distribution: AFG, ALB, AUT, BEL, BGR, CYP, DEU, DZA, ESP, FRA, GBR, GRC, ISR, IND, ISL, ITA, JOR, LBN, PHL(I), PAK, PRT, SUN, SYR, TUR, YUG. Map 30.

Ecology: Alt. 10-1250 m; Hab. agricultural and disturbed land, more rarely woodland edges.

Taxonomic notes: Plitmann (1967) comments that *V. bithynica* is both cultivated and wild, which may perhaps explains its wide distribution. I have been unable to trace any further record of its cultivation.

3.2.8 Section *Narbonensis*

VIII. Section *Narbonensis* (Radzhi) Maxted, Kew Bull. 47(1): 129-130 (1991c). Fl. USSR., 13: 473.

Annual; erect; stem stout. Stipules semi-sagittate; 7-28 x 4.5-25 mm; edge with 1-12 teeth. Leaf 7-126 mm; apex tendrilous; 2-12 leaflets per leaf; leaflets (8-)19-70 x 7-45 mm; asymmetric; margins entire, serrate or incised. Peduncle 1-29; with 1-6 flowers. Calyx mouth oblique; lower tooth longer than upper; base not gibbous; pedicel 1-4. Flowers 14-36 mm; all petals approximately equal length; standard cream, blue or purple; shape platonychoid; claw bowing absent; upper standard surface glabrous. Wing marking absent or present; wing limb with slight basal folding. Legume 27-75 x 7-20 mm; rectangular or rhomboid; round in cross-section or laterally flattened; sutures straight; valves pubescent; hairs tuberculate; septa absent or present; 2-9 seeds per legume. Seeds 4-8 x 4-8 mm; round; not laterally flattened; hilum less than quarter of seed circumference; lens positioned near hilum; testa surface smooth.

Number of taxa: 14

Chromosome number: 14.

Geographical distribution: Europe, North Africa and West Asia east to Pakistan.



Map 30. Distribution of *V. bithynica*.

Geographical notes: Sect. *Narbonensis* is composed of four species which are restricted to Southwest Asia and three species which are more widely distributed throughout Europe, West Asia and North Africa. The section's centre of diversity and possible origin is Southwest Asia. This hypothesis is supported, at least for *V. narbonensis*, by archaeological evidence (Schultze-Motel 1972; Renfrew 1973) from neolithic levels at Beidha in Israel.

Ecological notes: The species are most commonly associated with dry and open disturbed habitats. They are most commonly found growing as weeds in cereals and vineyards, or among rocks. The species are relatively large and are able to stand some shading and competition. They do not appear to show any preference for a particular altitude. Three of the geographically restricted species show a preference for basaltic soils, but the more widespread species show no apparent soil preferences.

Taxonomic notes: Sect. *Narbonensis* is composed of the seven species collectively known as the *V. narbonensis* complex, which are divided into two series. One species, *V. eristalioides*, is a distinct, peripheral member of the *V. narbonensis* complex. To reflect this isolation ser. *Rhombocarpae* Maxted (1991c) was erected to include this species (Maxted, 1991c). The other six species form a more closely related group and are included in ser. *Narbonensis*. These two series can be distinguished primarily by the difference in legume shape. *V. eristalioides*, like *V. bithynica*, has a rhomboid shaped legume, as opposed to the linear-rectangular legume of the ser. *Narbonensis* species. The inter-relationship of the seven species of this complex is discussed by Maxted *et al.* (1991).

A. Series *Rhombocarpae* Maxted, Kew Bull. 47(1): 129-130 (1991c).

Number of taxa: one.

Chromosome number: 14.

Geographical distribution: Turkey.

31. *V. eristalioides* Maxted, Notes Roy. Bot. Gard. Edinburgh, 45(3): 454 (1989a).

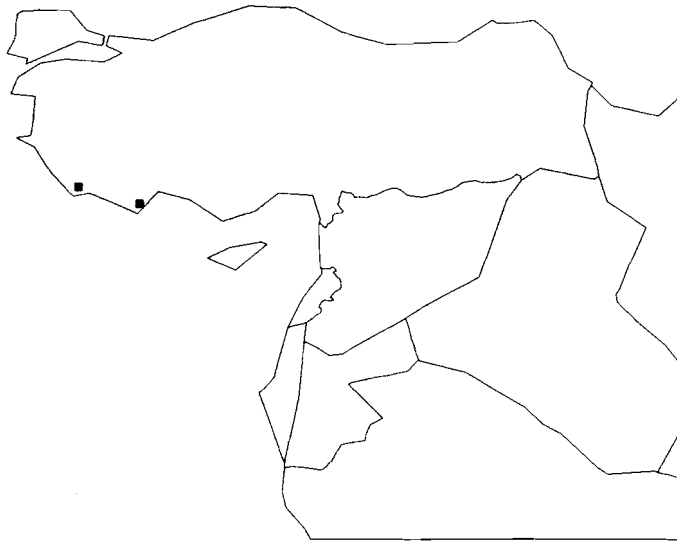
Phenology: April-May

Chromosome number: 14.

Geographical distribution: TUR, (endemic to Southwest Turkey). Map 31.

Ecology: Alt. 550-700 m; Soil, red mediterranean; Hab. limestone pavement, disturbed land and agricultural margins.

Taxonomic notes: *V. eristalioides* was linked by Maxted (1991) in the protologue to *V. galilaea*, *V. johannis* and *V. kalakhensis*. The flower colour and legume shape are similar to those of *V. bithynica*. The close relationship between *V. bithynica* and the other sect. *Faba sensu* Kupicha (1976) had recently been questioned by Maxted and Khattab (unpublished), but the discovery of *V. eristalioides* has strengthened the link between *V. bithynica* and the *V. narbonensis* complex. There are still sufficient differences between *V.*



Map 31. Distribution of *V. eristalioides*.

eristalioides and *V. bithynica*, however, to warrant their separation into distinct sections.

B. Series *Narbonensis* (Radzhi) Maxted, Kew Bull. 47(1): 129-130 (1991c). Fl. USSR., 13: 473.

Number of taxa: 13

Chromosome number: 14

Geographical distribution: Europe, North Africa and West Asia east to Pakistan.

Taxonomic notes: As discussed by Maxted *et al.* (1991) *V. narbonensis*, *V. serratifolia*, *V. johannis*, *V. galilaea* are very closely related, while *V. kalakhensis* and *V. hyaeniscyamus* are both slightly more remote. The close affinity of these six species makes specific identification very difficult unless all the diagnostic characters are present. Many of the diagnostic characters are cryptic and are often obscured by the process of specimen drying (e.g. flower colour, which fades on dried specimens), which makes herbarium specimen identification difficult.

32. *V. kalakhensis* Khattab, Maxted & Bisby, Kew Bull. 43(3): 536 (1988).

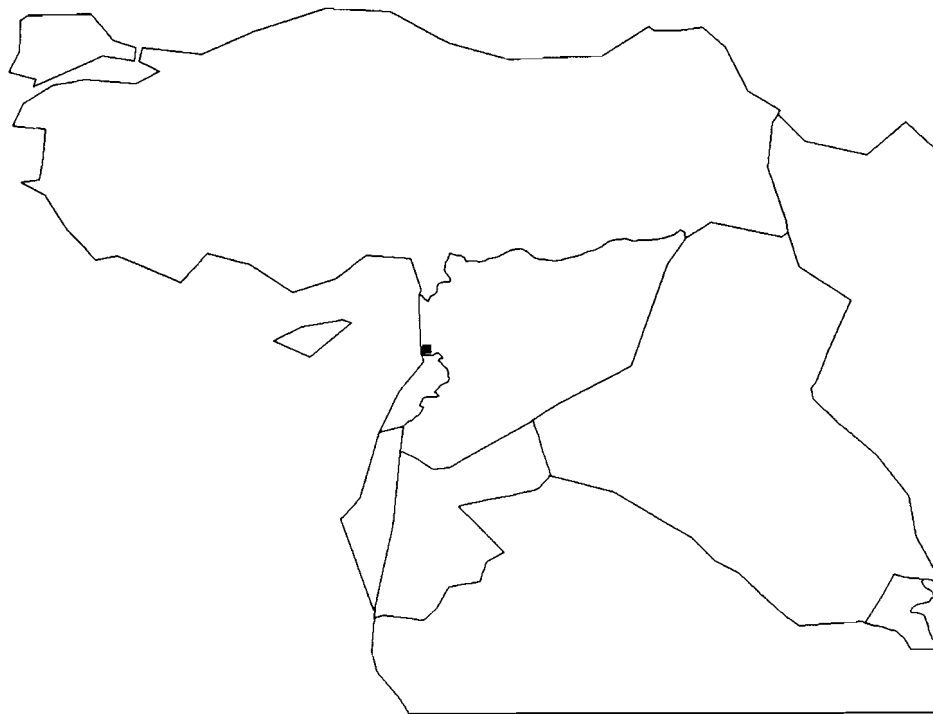
Phenology: March-June

Chromosome number: 14.

Geographical distribution: SYR (endemic to Homs province, possibly spreading across the border into Lebanon). Map 32.

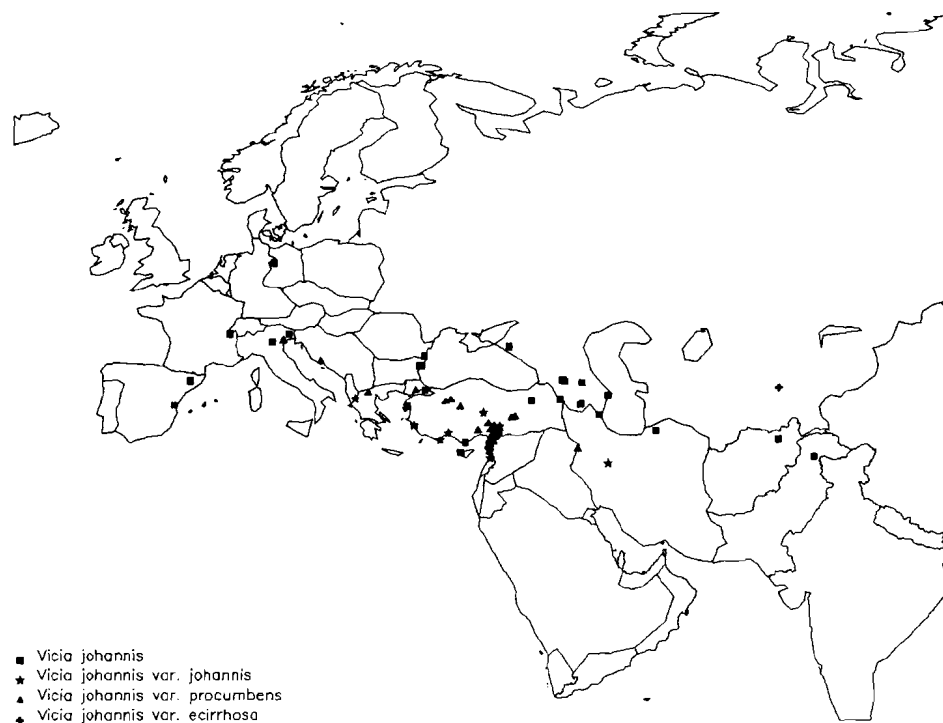
Ecology: Alt. 270-305 m; Soil, heavy black (basalt); Hab. moist meadows and scrubby hillside pasture.

Taxonomic notes: While attempting to locate *V. hyaeniscyamus* at its type location near Tel Kalakh, Homs, Syria in 1986 a novel member of the *V. narbonensis* complex was found and was subsequently described as *V. kalakhensis* by Khattab *et al.* (1988). They ally *V. kalakhensis* most closely to *V. johannis* and *V. galilaea*, and more remotely to *V. eristalioides*.

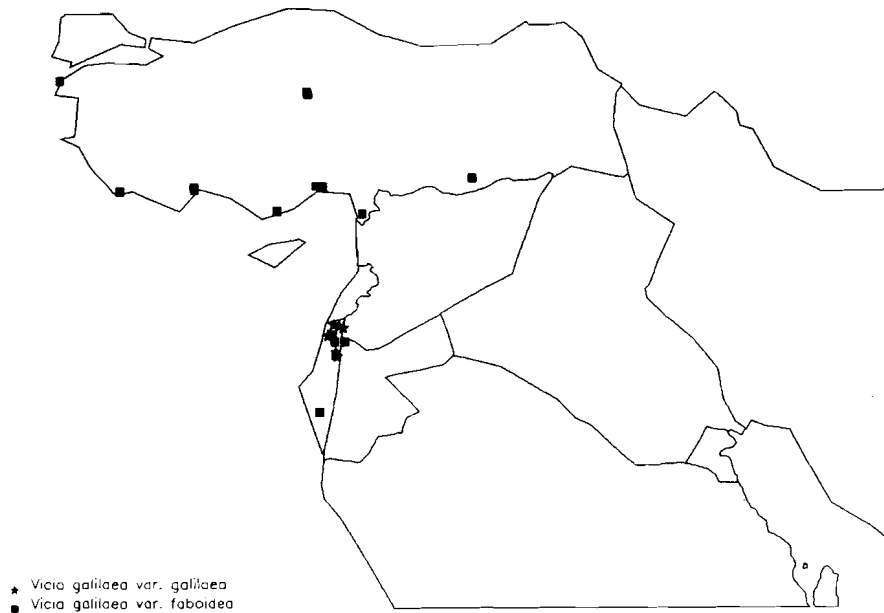


Map 32. Distribution of *V. kalakhensis*.

33. *V. johannis* Tamamschjan in Karyagin, Fl. Azerbaidzhan, 5: 495 (1954).
Phenology: March-July **Chromosome number:** 14.
Geographical distribution: AFG, ALB, AUT, BGR, CHE, CYP, DEU, ESP, FRA, GRC, IRN, ITA, LBY, PAK, POL, ROM, SAU, SUN, SYR, TUR, YUG.
Map 33.
Ecology: Alt. 30-1150 m; Hab. maquis, disturbed agricultural land and open woodland.
Taxonomic notes: Plitmann (1967) does not recognise the existence of *V. johannis*, referring instead to transition forms between other *V. narbonensis* complex taxa. However, Birch *et al.* (1985) concluded that *V. johannis* was a clearly separable taxon within the *V. narbonensis* complex. Field observation of this taxon has led me to concur with this view.
- i. *V. johannis* var. *ecirrhosa* (Popov) H. Schäfer, Kulturpflanze 21: 261 (1973).
Phenology: May **Chromosome number:** N.A.
Geographical distribution: SUN, (endemic to Tashkent, Uzbekistan).
Ecology: Weed in mountain cereal crops.
- ii. *V. johannis* var. *procumbens* H. Schäfer, Kulturpflanze 21: 261 (1973).
Phenology: March-June **Chromosome number:** 14.
Geographical distribution: GRC, IRN, ITA, SAU, SYR, TUR, YUG.
Ecology: Alt. 100-1350 m; Hab. maquis, disturbed agricultural land and open woodland.
- iii. *V. johannis* var. *johannis* Tamamschian in Karyagin, Fl. Azerbaidzhan, 5: 495 (1954).
Phenology: March-June **Chromosome number:** 14.
Geographical distribution: ALB, IRN, SUN, SYR, TUR.
Ecology: Alt. 20-2050 m; Hab. maquis, disturbed agricultural land and open woodland.
34. *V. galilaea* Plitm. & Zoh. in Plitm., Isr. J. Bot., 14: 91 (1965). Fl. Pal., 2: 209; Fl. Tur., 3: 323; Illust. Fl. Pal., 2 (plates): 298.
Phenology: March-July **Chromosome number:** 14.
Geographical distribution: ISR, JOR, TUR. A rather disjunct distribution, but no specimens have yet been recorded from Lebanon or Syria. Map 34.
Ecology: Alt. 30-1300 m; Hab. maquis, open woodland, disturbed agricultural land.
Taxonomic notes: Plitmann (1965) and Zohary & Hopf (1973) tentatively



Map 33. Distribution of *V. johannis*.



Map 34. Distribution of *V. galilaea*.

suggest that *V. galilaea* is the closest ally of the fababean on the basis of morphological characters. Yamamoto *et al.* (1982) undertook a karyotypic, isozyme polymorphism, morphological and hybridization study of sect. *Faba sensu* Kupicha (1976) and reached the same conclusion. Each of these authors, however, stresses that in their opinion *V. galilaea* was not the progenitor of *V. faba*.

i. *V. galilaea* var. *galilaea* (Plitm. & Zoh. in Plitm.) H. Schäfer, Kulturpflanze 21: 265 (1973). Fl. Pal., 2: 209.

Phenology: March-July

Chromosome number: 14.

Geographical distribution: ISR.

Ecology: Alt. 100 m; Soil, Basalt; Hab. maquis, open woodland, disturbed agricultural land.

ii. *V. galilaea* var. *faboidea* (Plitm. & Zoh. in Plitm.) H. Schäfer, Kulturpflanze 21: 265 (1973). Fl. Pal., 2: 209.

Phenology: March-July

Chromosome number: 14.

Geographical distribution: ISR, JOR, LBN, SYR, TUR.

Ecology: Alt. 30-1300 m; Hab. maquis, open woodland, disturbed agricultural land.

35. *V. serratifolia* Jacq., Fl. Austr. 5: 30 (1778). Fl. Iran., 56; Fl. Iraq, 3: 542; Fl. Pal., 2: 208-209; Fl. Syr., 2: 407; Fl. Tur., 3: 322; Fl. USSR., 13: 474.

Phenology: February-September **Chromosome number:** 14.

Geographical distribution: AUT, BEL, BGR, CSK, DEU, DZA, EGY, ESP, FRA, GBR, GRC, HUN, ISR, IRQ, IRN, ITA, JOR, MAR, PRT, ROM, SUN, TUR, YUG. Map 35.

Ecology: Alt. 60-1100 m; Hab. disturbed and agricultural land, more rarely open woodland.

Taxonomic notes: Some authors believe that *V. serratifolia* is insufficiently distinct from *V. narbonensis* to warrant specific status (Rouy 1899; Ascherson & Graebner 1909; Plitmann 1967; Ball 1968; Kupicha 1976 and Chrtkova-Zertova 1979). However, Khattab (1987) lists several characters, which were correlated with the difference in leaflet margin serrations and these can be used to distinguish these two species.



Map 35. Distribution of *V. serratifolia*.

Intermediate specimens with characteristics of *V. narbonensis* and *V. serratifolia* are rarely found; five specimens were seen during the current study (Al Eisawi 1311, RNG; Maxted, Ehrman et Khattab 2561 SPN; Simpson 467, K; Dinsmore 13090, K and Adamson s.n., BM). All five of these specimens have upper leaflets with more than six margin serrations, but also have lower leaflets with a crenate margin. Although upper leaflet serrations are common in all *V. narbonensis* complex species, only *V. serratifolia* is thought to have more than six margin serrations per leaflet (Khattab 1987).

36. *V. narbonensis* L., Sp. Pl. 2: 737 (1753). Fl. Eur., 2: 135; Fl. Iran., 55-56; Fl. Iraq, 3: 540-542; Fl. Pal., 2: 208-209; Fl. Syr., 2: 406; Fl. Tur., 3: 321-322; Fl. USSR., 13: 473-474; Illust. Fl. Iran., Tab. 36, fig. 1; Fl. Pal., 2 (plates): 297.

Phenology: March-July

Chromosome number: 14.

Geographical distribution: ALB, AUT, BEL, BGR, CHE, CSK, CYP, DEU, DZA, EGY, ESP, FRA, GBR, GRC, HUN, ISR, IRQ, IRN, ITA, JOR, LBN, LBY, MAR, PAK, POL, PRT, ROM, SUN, SYR, TUN, TUR, UGA(I), YUG. Map 36

Ecology: Alt. 14-2100 m; Hab. disturbed and agricultural land, and more rarely open woodland.

Taxonomic notes: This species is a common wild and minor cultivated forage and fodder plant in North Africa and West Asia (Enneking & Maxted 1994). ICARDA (1988) are promoting the use of *V. narbonensis* as a replacement for fallow in the traditional barley-fallow rotation in the Eastern Mediterranean.

V. narbonensis is considered by many authors (Ball 1968; Davis & Plitmann 1970; Hanelt *et al.* 1972; Schäfer 1973; Kupicha 1976; Maxted *et al.* 1991) to be the morphological closest wild relative of the fababean. A detailed discussion of inter-taxon relationships between *V. narbonensis* and *V. faba* is provided in Maxted *et al.* (1991).

i. *V. narbonensis* var. *salmonea* (Mout.) H. Schäfer, Kulturpflanze XXI 253-254 (1973).

Phenology: February-May

Chromosome number: 14.

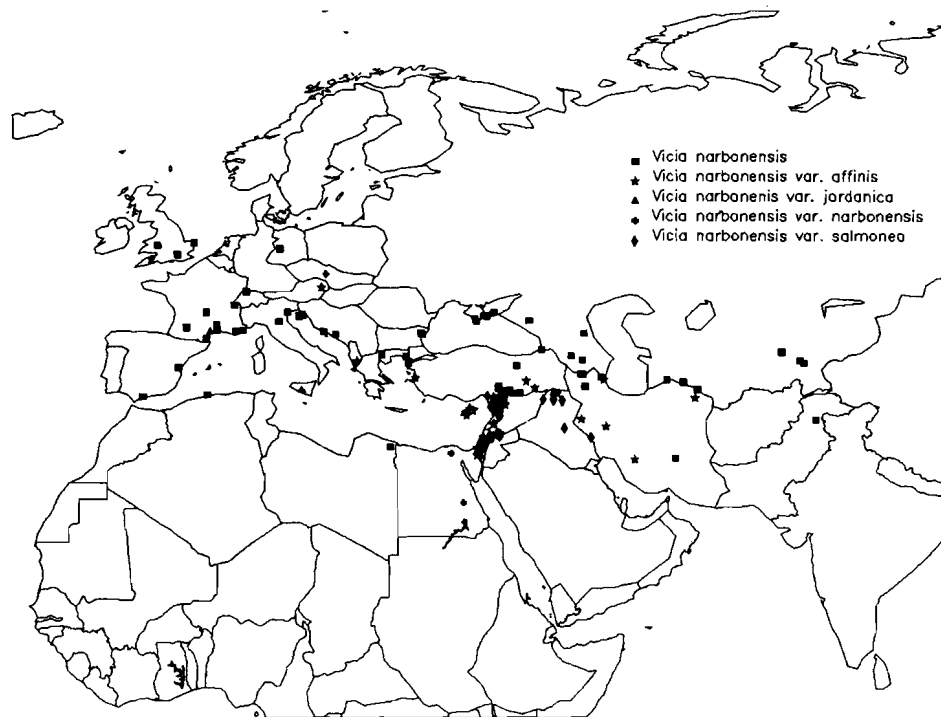
Geographical distribution: CYP, CSK, EGY, FRA, GRC, ISR, IRQ, JOR, SYR, TUR.

Ecology: Alt. 20-1510 m; Hab. disturbed and agricultural land, and more rarely open woodland.

ii. *V. narbonensis* var. *jordanica* H. Schäfer, Kulturpflanze 21: 251 (1973).

Phenology: March-May

Chromosome number: 14.



Map 36. Distribution of *V. narbonensis*.

Geographical distribution: CYP, FRA, ISR, IRN, ITA, JOR, SYR, TUR.
Ecology: Alt. 180-1320 m; Hab. disturbed and agricultural land, and more rarely open woodland.

iii. *V. narbonensis* var. *affinis* Kornhuber ex Asch. & Schweinf. Mem. Inst. Egypt, 2: 756 (1889).

Phenology: February-May **Chromosome number:** N.A.
Geographical distribution: ALB, AUT, CYP, EGY, GBR, ISR, IRQ, IRN, JOR, PRT, SYR, TUR.

Ecology: Alt. 30-1510 m; Hab. disturbed and agricultural land, and more rarely open woodland.

iv. *V. narbonensis* var. *aegyptiaca* Kornhuber ex Asch. & Schweinf., Mem. Inst. Egypt 2: 756 (1889).

Phenology: April-May **Chromosome number:** 14.
Geographical distribution: EGY, FRA, SYR.

Ecology: Alt. 40-1430 m; Hab. disturbed and agricultural land, and more rarely open woodland.

v. *V. narbonensis* var. *narbonensis* L., Sp. Pl., 2: 737 (1753).

Phenology: March-April **Chromosome number:** 14.
Geographical distribution: CYP, EGY, ISR, SYR, TUR.

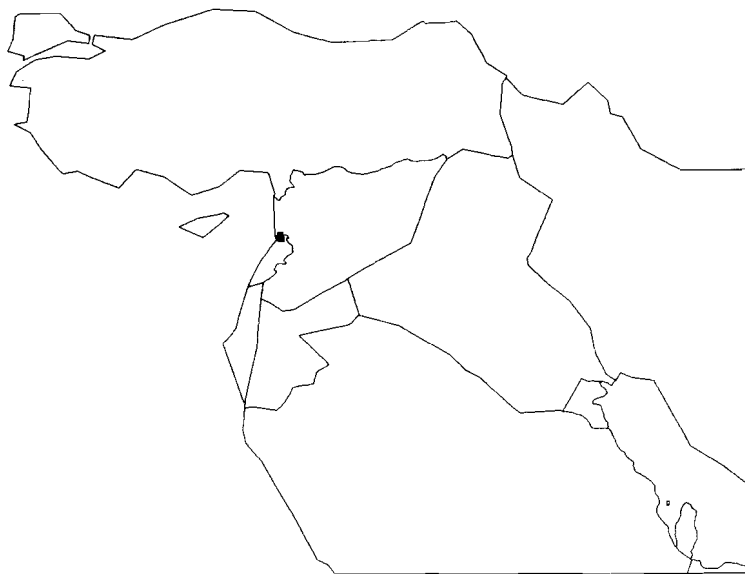
Ecology: Alt. 360-820 m; Hab. minor cultivated crop in Middle East. Weed of disturbed and agricultural land, and more rarely open woodland.

37. *V. hyaeniscyamus* Mout., Bul. Soc. Bot. Fr., 108: 314 (1961). Fl. Syr., 2: 408. Figure 3.11.

Phenology: March-May **Chromosome number:** 14.
Geographical distribution: LE, SYR. Map 37.

Ecology: Alt. 270-370 m; Soil, basalt, Heavy black & terra rossa Heavy black (basalt); Hab. disturbed agricultural land and open woodland.

Taxonomic notes: Khattab *et al.* (1988) attempted to clarify the confusion in the literature concerning the specific distinction of *V. hyaeniscyamus* from the other species of the *V. narbonensis* complex. An attempt was made by Maxted, Khattab & Bisby to relocate *V. hyaeniscyamus* at its type locality and five populations with the unique character combination described by Mouterde were located. Recently (Maxted 1989a) found a further three populations North of Tel Kalakh.



Map 37. *Vicia hyaeniscyamus*.

3.2.9 Section *Faba*

IX. Section *Faba* (Miller) Ledeb., Fl. Ross., 1: 664 (1842). Fl. Iran., 56; Fl. Iraq, 3: 540; Fl. Tur., 3: 321; Fl. USSR., 13: 474.

Annual; erect; stem stout. Stipules semi-hastate or semi-sagittate; 6.5-24 x 6-15 mm; edge with 1-8 teeth. Leaf 22-110 mm; apex mucronate; 2-8 leaflet per leaf; leaflets 22-90 x 9-47 mm; symmetric; margins entire. Peduncle 3-30 mm; with 2-10 flowers. Calyx mouth oblique; lower tooth longer than upper; base not gibbous; pedicel 1-3 mm. Flowers 20-33 mm; all petals approximately equal length; standard white; shape platonychoid or stenonychoid; claw bowing absent; upper standard surface glabrous. Wing marking present; wing limb with slight basal folding. Legume 22-140 x 6-23 mm; rectangular; laterally flattened; sutures straight; valve pubescent; hairs simple; septa present; 1-10 seeds per legume. Seeds 8-30 x 6-17.5; oblong; laterally flattened or not laterally flattened; hilum less than quarter of seed circumference; lens positioned near hilum; testa surface smooth.

Number of taxa: four.

Chromosome number: 12.

Geographical distribution: Cultivated species unknown in the wild.

Geographical notes: Maxted *et al.* (1991) discuss the cultivated distribution

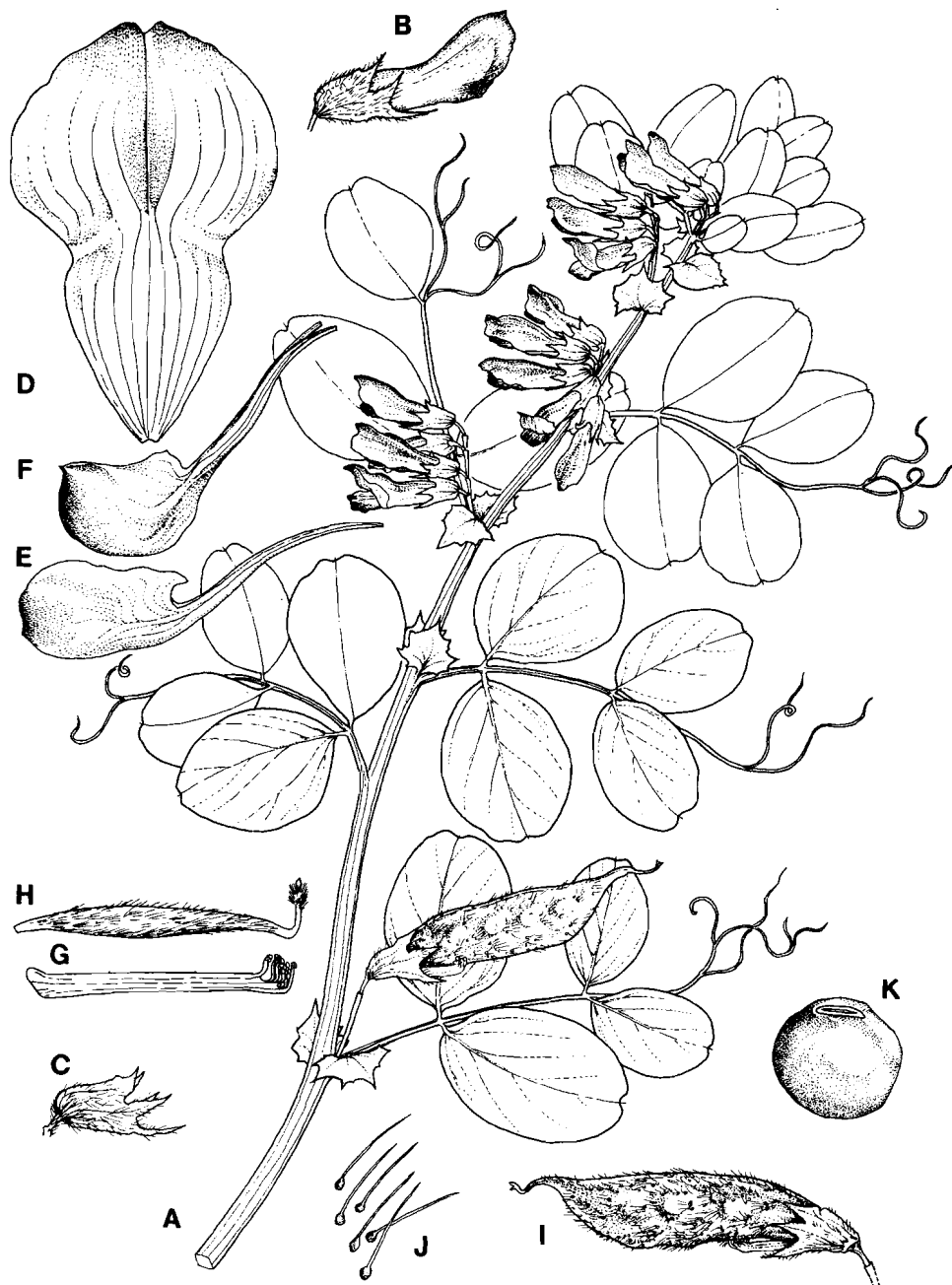


Figure 3.11. *Vicia hyaeniscyamus*. A habit x 0.5; B flower x 1; C calyx x 1.25; D standard petal x 2; E wing petal x 2; F keel petal x 2; G stamen x 2; H ovary, style and stigma x 2; I fruit x 0.75; J hairs on legume valve x 18; K seed x 3, A-K from Maxted 1767.

of *V. faba*. Cultivation of the fababean is undertaken throughout the Northern Temperate zone and at higher altitudes in some subtropical regions. The largest areas are currently cultivated in China and the Middle East.

Ecological notes: Crop plant

Taxonomic notes: Many researchers undertaking a taxonomic study of sect. *Faba* have attempted to locate the closest ally of *V. faba*. Approaching the problem from this aspect they have found the fababean's closest allies to lie in the *V. narbonensis* complex of species. This has resulted in them classifying *V. faba* with the *V. narbonensis* complex, in a single section. For a clear view of the relationship between *V. faba* and other *Vicia* species a broader approach must be taken. This broader approach would give scale to the allocation of series, section and generic rank and so would allow the position of *V. faba* to be more 'naturally' defined. *V. faba* is clearly distinct from the sect. *Narbonensis* species on numerous characters, e.g. plant habit, gross morphology, leaflet size and shape, whether their hairs are tubercular, flower colour and size, legume and seed shape and size. This led Maxted *et al.* (1991) to conclude that *V. faba* was more isolated from its closest morphological allies than had been generally appreciated. Maxted (1993b) places *V. faba* in the monospecific section *Faba* (Miller) Ledeb.

38 *V. faba* L., Sp. Pl. 2: 737 (1753). Fl. Eur., 2: 135-136; Fl. Iran., 57; Fl. Iraq, 3: 542-544; Fl. Syr., 2: 408-409; Fl. Tur., 3: 324; Fl. USSR., 13: 474-475; Illust. Fl. Iran., Tab. 36, fig. 2. Figure 3.12. **Chromosome number:** 12, (14).

i *V. faba* subsp. *paucijuga* Murat, Bull. App. Bot. Leningrad, Supp. 50, 73 (1931). Type: (LE). **Chromosome number:** 12.

Geographical distribution: This subspecies has a more restricted geographical range of cultivation than subspecies *Faba*; it is currently grown in Afghanistan, Pakistan and small areas of Northwest India.

ii. *V. faba* subsp. *faba* L., Sp. Pl. 2: 737 (1753). **Chromosome number:** 12, (14).

ii/a. *V. faba* subsp. *faba* var. *minor* Beck, Fl. Nieder-Osterreich, 2: 889-894 (1892). **Chromosome number:** 12.

ii/b. *V. faba* subsp. *faba* var. *equina* Pers., Syn. pl. (2): 273-657 (1807).

Chromosome number: 12.

ii/c. *V. faba* subsp. *faba* var. *faba* L., Sp. Pl. 2: 737 (1753).

Chromosome number: 12, (14).

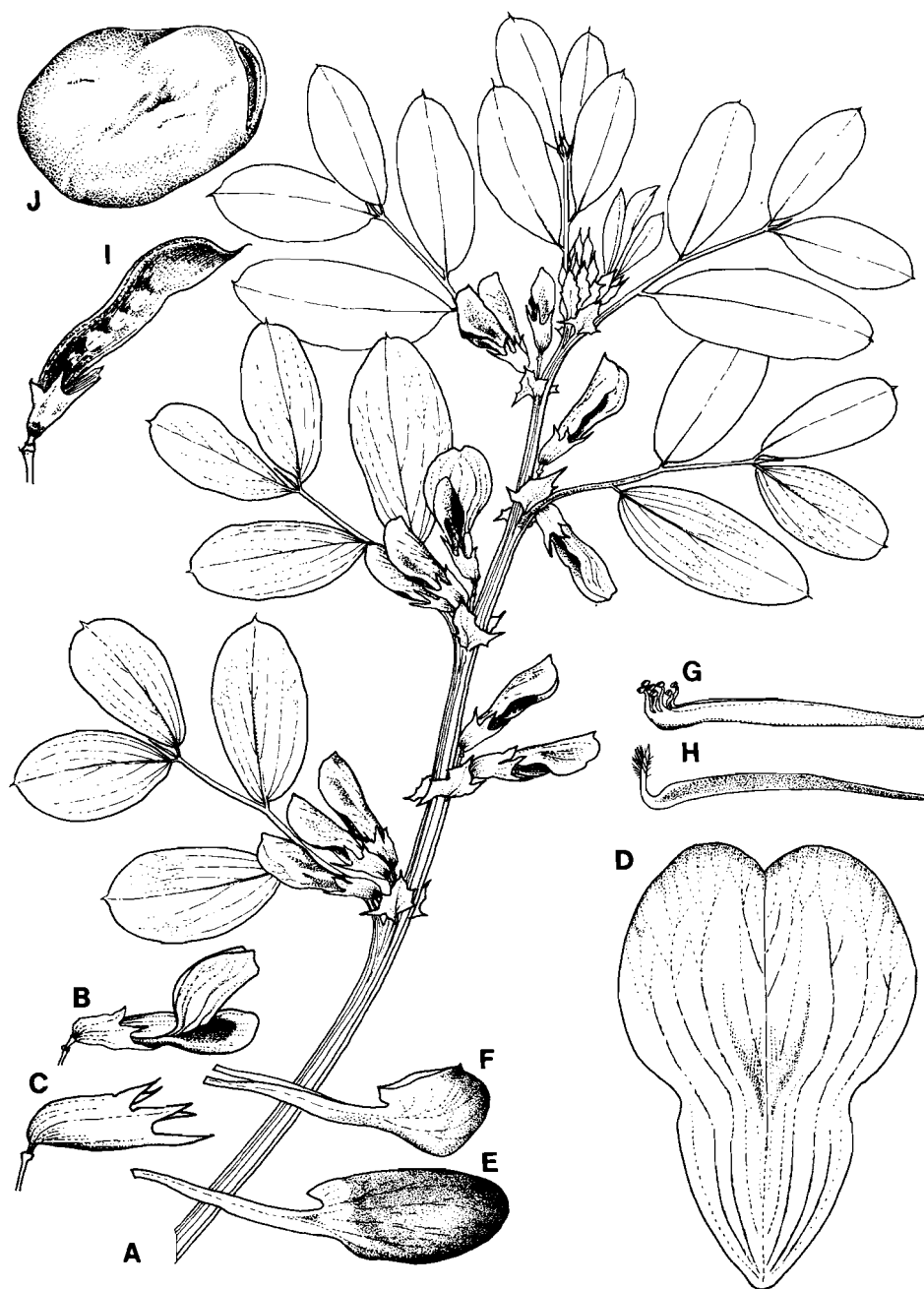


Figure 3.12. *Vicia faba* subsp. *faba* var. *faba*: A habit x 0.5; B flower x 0.75; C calyx x 1.5; D standard petal x 2; E wing petal x 2; F keel petal x 2; G stamen x 2; H ovary, style and stigma x 2; I fruit x 0.5; J seed x 1.5. A-H and J from Khattab 100, I from Khattab 202.

4. DISCUSSION

4.1 Introduction

The discussion of the ecogeography of the subgenus can practically be split in two, ecology and geography. There is less information available on the ecology of subgenus *Vicia* than on its phyto geography, but the information that is available will be discussed. The discussion of subgenus *Vicia* phyto-geography will be further subdivided into three sections: firstly, prior phyto-geographical studies, where the information available from the literature will be reviewed; secondly, phyto geography of *Vicia faba*, which is only known as a cultivated plant and therefore the distribution is directed by man; thirdly, the present phyto geographical study. Present conservation activities and genebank holdings of *Vicia* subgenus *Vicia* are reviewed. The final section identifies future *ex situ* and *in situ* conservation priorities and suggests appropriate conservation strategies.

4.2 Ecology of *Vicia* subgenus *Vicia*

The failure of the many botanical collectors to record ecological provenance data on specimen labels would make the drawing of firm ecological conclusions based on specimen label data alone unsound. So the following discussion is based partially on observations of the plant populations observed during field collection missions and partially on specimen label data.

The majority of the thirty-eight species of subgenus *Vicia* occupy similar niches in dry, open areas of disturbed ground and are commonly considered weeds of cultivation or disturbed land on the margins of cultivation. The exception to this rule are the species of the perennial section, *Atossa*. The species of this section have a clear preference for more moist, stable, closed communities in or on the margins of shaded woodland. They, except for *V. sepium*, are commonly found at higher altitudes (> 1500 m) in wetter conditions than are other species of the subgenus. The other two species which show a preference for more moist conditions are *V. dionysiensis* and *V. esdraelonensis*, which are both restricted endemic species.

V. dionysiensis shares, together with *V. galilaea*, *V. hyaeniscyamus* and *V. kalakhensis*, a preference for basaltic soils, but the other species do not appear to exhibit any clear edaphic preferences. The response of the species to plant competition varies but, in general, as might be expected, the larger more robust and the perennial plants of sections *Atossa*, *Vicia* and *Narbonensis* and of series *Hyrcanicae* are better competitors.

Generally, the species do not respond well to grazing, with the exception

of the forage species *V. sativa* and *V. noeana*. However, it should be noted that the two species of sect. *Wiggersia* are commonly found in heavily grazed areas. This may, perhaps, be explained by the diminutive stature of these plants, which rather than recovering readily from grazing damage, may actually avoid the initial damage.

4.3 Prior phytogeographic studies of *Vicia* subgenus *Vicia*

The genus *Vicia* is primarily Euro-Asiatic, with other distributional centres in North America, South America, East Africa and Hawaii (Kupicha 1976; Hanelt & Mettin 1989). A detailed study of the phytogeography of *Vicia* was undertaken by Kupicha (1974). She discusses *Vicia* phytogeography using distributional and isoflor maps. In both cases she does not discuss the details of individual species, but rather sections as defined in her classification. Her sectional distribution map for the five sections of subgenus *Vicia* that she recognizes is shown in Figure 4.1. For her treatment she includes taxa only if they are wild or fully naturalized in part of their range, i.e. she does not draw distributional maps for *V. faba* (which is not known in the wild) or *V. sativa* in the Americas or Africa (where it is not native). She states that over half the North American species of *Vicia* are introductions from the Old World (these include *V. oroboides*, *V. sepium*, *V. lathyroides*, *V. sativa*, *V. grandiflora*, *V. lutea*, *V. pannonica*, *V. narbonensis* and *V. faba*).

The distribution of the five sections of *Vicia* subgenus *Vicia sensu* Kupicha (1976) (Figure 4.1) centres on the Northeast Mediterranean, with the highest concentration of species found in the fertile crescent countries of Turkey, Lebanon, Syria, Soviet Asia, Iran and Iraq. The distribution of sect. *Peregrinae* is essentially restricted to this area. The other four sections, *Hypechusa*, *Faba*, *Vicia* and *Atossa*, are more geographically dispersed, covering Europe, North Africa and spreading across to the extreme northeast of Asia. It should be noted that in the case of sections *Vicia* and *Atossa*, there are two pan-temperate species, *V. sativa* and *V. sepium*, which greatly extend the distributional area covered by their sections as a whole.

Three publications, Schäfer (1973), Khattab (1987) and Maxted *et al.* (1991), have specifically studied the distributional pattern of *V. faba* and its allies in an attempt to clarify the centre of origin of *V. faba*. Schäfer (1973), following a study of the *V. narbonensis* complex (sect. *Narbonensis sensu* Maxted, 1993a), concluded that *V. faba* and the complex are distributed throughout the Mediterranean region, but that there is a concentration of species in the Near East. Khattab (1987) pointed out that *V. bithynica*, *V. serratifolia* and *V. narbonensis* have the widest distributions from Britain through Europe and the Mediterranean Basin to Iran and Afghanistan, although Plitmann (1967) suggested

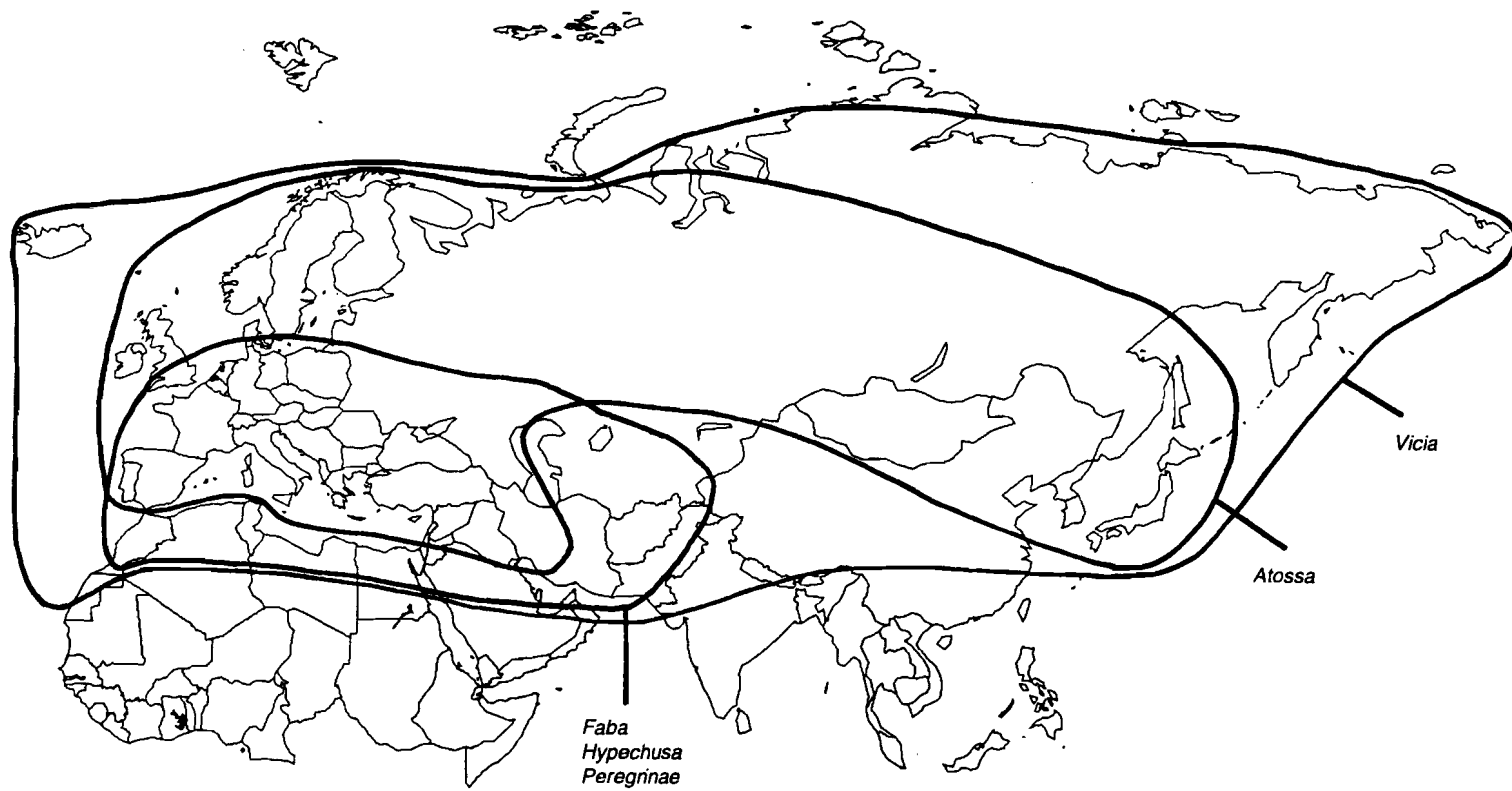


Figure 4.1. Sectional distribution map for the five sections of subgenus *Vicia sensu* Kupicha (1976).

V. bithynica may have been introduced to Afghanistan.

The distribution of *V. johannis* is more restricted and is concentrated in the Northern Mediterranean countries. Khattab records a few specimens from Poland and Afghanistan, both of which he regards as "introductions or casuals". However, large populations of *V. johannis* have been observed on the Soviet-Afghanistan border (Maxted 1991), which appeared to be native. Field observation suggests that this species is distributed throughout West Asia and during visits to West Asian herbaria, it became apparent that numerous *V. johannis* specimens had been misidentified as *V. narbonensis*. It is difficult to separate these two species unless flowering specimens are seen.

The remaining species are more restricted endemics of the Near East, *V. galilaea* to Turkey and Israel, *V. hyaeniscyamus* to Syria and Lebanon and *V. kalakhensis* to Syria (and most likely Lebanon). The existence of *V. eristalioides* was not known to Schäfer or Khattab, but this sect. *Narbonensis* species is a narrow endemic of Southwest Turkey.

Maxted *et al.* (1991) and Maxted (1993b) concluded that the current distribution of the section *Narbonensis* taxa is not helpful when trying to suggest a centre of origin for the fababean. They point out that the species of the *V. narbonensis* complex are not as closely allied to *V. faba* as was believed by previous authors. However, the four most geographically restricted species of section *Narbonensis* (*V. galilaea*, *V. hyaeniscyamus*, *V. kalakhensis* and *V. eristalioides*) have all been discovered since 1960 and there is a possibility that further new species, allied to *V. faba*, may still be located and identified. Until the complete Fertile Crescent countries have been collected more systematically, it is difficult to draw firm conclusions about the ancestry of the fababean or the phytogeography of sect. *Narbonensis*.

4.4 Phytogeography of *Vicia faba*

Maxted *et al.* (1991) discuss the current cultivated distribution of *V. faba*. The fababean (subsp. *faba*) is not known in the wild but is currently cultivated throughout the Northern Temperate zone and at higher altitudes in some subtropical regions. The distribution of the smaller seeded subspecies, *paucijuga*, was shown by Muratova (1931) to be restricted to Afghanistan, Pakistan and India. Further detailed study of the current distribution of the two subspecies and three varieties of *V. faba* is required.

Archaeological evidence suggests *V. faba* was introduced into agriculture either in the neolithic (Renfrew 1973) or the mid to late bronze age (Schultze-Motel 1972). Zohary and Hopf (1973) question the validity of the former record because it is based on one early site and they believe the identification may have been confused with a sample of section *Narbonensis* material (possibly *V. narbonensis*).

The earliest forms of *V. faba* were small seeded, and so would currently be classified as subspecies *faba* var. *minor* or subspecies *paucijuga*. The earliest form of the broad bean (*V. faba* subspecies *faba* var. *faba*) was located in Iraq and dated from 1000 AD (Zeven and de Wet 1982). Cultivation of the small-seeded forms is thought to have originated in southwestern Asia, between Afghanistan and the Eastern Mediterranean (Muratova 1931; Hanelt *et al.* 1972; Cubero 1974; Zohary & Hopf 1973; Zohary 1977) and then radiated to Europe, China and the Mediterranean (Muratova 1931; Zeven & de Wet 1982).

Ladizinsky (1975) and Cubero and Suso (1981) argue that the taxon within *V. faba* which shows least advancement, and which they consider closest to the ancient form, is subspecies *paucijuga*. This subspecies has a relatively restricted distribution in comparison with subspecies *faba*. Ladizinsky suggests a detailed study of its distribution could locate its centre of diversity and point to possible locations to search for the progenitor. However, Zohary (1977) points out the fababean was probably domesticated in the fifth millennium BC, which was before agriculture reached Afghanistan. So material from Afghanistan could not then have been available to early agriculturalists at the time of its proposed domestication. Cubero (1984) attempts to explain the presence of these early forms in Afghanistan by hypothesising that *V. faba* was carried to Afghanistan early in its development and there did not undergo further domestication. While in comparison, the material in the centre of origin was bred extensively and the original forms were eliminated.

Trabut (1910) described the new species, *Faba pliniana*, from Algerian material and suggested it could be a progenitor of *V. faba*. Traub (1911) hypothesises a two-centre evolution for *V. faba*, south of the Caspian sea and in southern Algeria. The specific distinction of *V. pliniana* was questioned by Muratova (1931) and Hanelt *et al.* (1972). The latter considered *V. pliniana* a primitive landrace of *V. faba*. Perrino (pers. comm.), while collecting in southern Algeria, encountered populations that fitted the description of *V. pliniana*, but considered them to be *V. faba* subspecies *faba* var. *minor*. As a consequence of the sinking of *V. pliniana* in *V. faba*, the idea of a second centre of fababean origin in southern Algeria has not been taken up by subsequent authors.

Maxted (1993b), while surveying and collecting forage legume material from the Central Asian republics of the former Soviet Union, located some aberrant *V. narbonensis* L. specimens with introgressive characteristics of *V. faba*. These specimens do not in themselves represent the progenitor, but their discovery suggests that greater effort should be focused on the collection, characterisation and conservation of *Vicia* material from Soviet Central Asia.

4.5 Phytogeography of *Vicia* subgenus *Vicia*

The worldwide distribution of 32 species of subgenus *Vicia* is detailed by Allkin *et al.* (1983). This has been amended to include the six species not known to Allkin *et al.* and is summarized in Table 4.1. The distributional information published by Allkin *et al.* is taken from the Viciae Project Database which contains only native records, excluding distributional information for wholly cultivated species and aliens. The species distribution data for the specimens seen during the course of the study is summarized in Appendix IV. It can be seen that the distribution of the species of subgenus *Vicia* is primarily Euro-Asiatic, with extensions into North Africa. The distribution of the eight sections containing wild species is drawn in Figure 4.2 and the distribution patterns of the 18 supraspecific taxa of subgenus *Vicia* are summarized in Table 4.2. The six isoflor maps for the six multi-taxon sections are drawn in Figures 4.3 to 4.8.

Isoflor maps do not show actual species distributions, but each line is a contour delimiting a greater or lesser concentration of species. The species distributions for each species is plotted onto one sectional map, then contours are drawn around areas of similar species concentration. The isoflor maps are intended to indicate patterns of distribution concentration, rather than actual distributional patterns. The three monospecific sections, *Microcarinae* (*V. dionysiensis*), *Bithynicae* (*V. bithynica*) and *Faba* (*V. faba*), have not had isoflor maps drawn as this is not possible for a single taxon.

The sections of the subgenus have their centre of diversity in Southern Europe and West Asia, with extensions into Northern Europe, Northern Asia and North Africa. The highest concentrations of taxa, and thus diversity, are found in the fertile crescent countries of Turkey, Lebanon, Syria, the Caucasus, Central Asian, Iran and Iraq. Most sections and series can be seen to be distributed throughout Europe, West Asia and North Africa, though it should be noted that this picture is distorted by the presence of single widespread species among more restricted taxa. Two monospecific supraspecific taxa are very restricted, because the one species included in each is a very restricted endemic, section *Microcarinae* (*V. dionysiensis* from the Djebel Druze, Syria) and series *Rhombocarpae* (*V. eristalioides* from southwest Turkey).

Isoflor maps can be used to indicate the centre of diversity of a group of taxa. The isoflor map for sect. *Atossa*, Figure 4.3, indicates dual centres of diversity concentrated in Northern Yugoslavia and the Caucasus. Within the section, the three series have quite distinct distributions. Ser. *Pseudovicilla* is centred on Middle Europe, ser. *Truncatulae* on the Caucasus and ser. *Atossa* is much more widely distributed in Europe and North Asia. The differences, in distributional centres, underline the taxonomic distance (based on morphological characteristics) between these three series. The level and pattern of

**Table 4.1. Geographical distribution of *Vicia* subgenus *Vicia* species.
Adapted from Kupicha (1974) and Ailkin *et al.* (1983).**

Sect.	Species	Distribution
<i>Atossa</i>	<i>V. oroboides</i>	Central-southeast Europe
	<i>V. balansae</i>	C.I.S. & Turkey in Asia
	<i>V. abbreviata</i>	West Asia
	<i>V. sepium</i>	Europe & North Asia
<i>Microcarinae</i>	<i>V. dionysiensis</i>	Syria
<i>Hypechusa</i>	<i>V. assyriaca</i>	West Asia
	<i>V. esdraelonensis</i>	West Asia
	<i>V. tigridis</i>	Syria
	<i>V. galeata</i>	West Asia
	<i>V. hyrcanica</i>	West-central Asia
	<i>V. noeana</i>	West Asia
	<i>V. melanops</i>	South Europe & Turkey
	<i>V. ciliatula</i>	C.I.S. & Turkey in Asia
	<i>V. anatolica</i>	Iran, C.I.S & Turkey
	<i>V. mollis</i>	West Asia
	<i>V. pannonica</i>	South Europe, West Asia & N. Africa
	<i>V. hybrida</i>	Europe, West Asia & North Africa
	<i>V. sericocarpa</i>	West Asia
	<i>V. lutea</i>	South Europe, West Asia & N. Africa
<i>Peregrinae</i>	<i>V. michauxii</i>	West Asia
	<i>V. aintabensis</i>	West Asia
	<i>V. peregrina</i>	South Europe, West Asia & North Africa
<i>Wiggersia</i>	<i>V. cuspidata</i>	Southeast Europe & West Asia
	<i>V. lathyroides</i>	Europe, West Asia & Algeria
<i>Vicia</i>	<i>V. pyrenaica</i>	France & Spain
	<i>V. sativa</i>	Europe, Asia & North Africa
	<i>V. barbazitae</i>	South Europe & West Asia
	<i>V. qatmensis</i>	Syria
	<i>V. grandiflora</i>	East Europe & West Asia
<i>Bithynicae</i>	<i>V. bithynica</i>	Europe, West Asia & Algeria
<i>Narbonensis</i>	<i>V. eristalioides</i>	Turkey
	<i>V. kalakhensis</i>	Syria
	<i>V. johannis</i>	South Europe, West Asia & Libya
	<i>V. galilaea</i>	Israel & Turkey
	<i>V. narbonensis</i>	Europe, West Asia & North Africa
	<i>V. hyaeniscyamus</i>	Syria & Lebanon
<i>Faba</i>	<i>V. faba</i>	Only known in cultivation

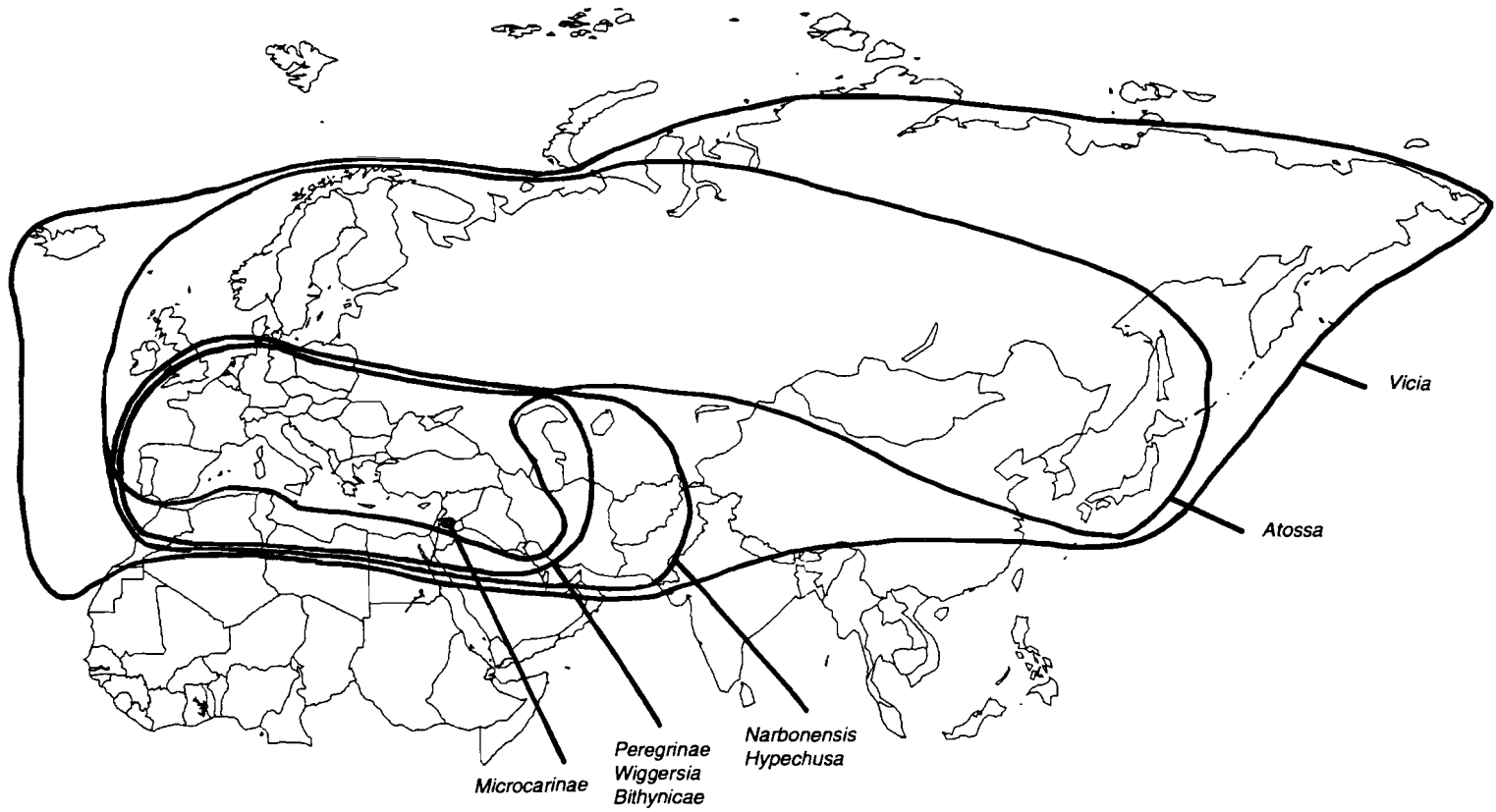


Figure 4.2. Sectional distribution map for the eight sections of subgenus *Vicia sensu* Maxted (1993).

Table 4.2. Distribution of supra-specific taxa of *Vicia* subgenus *Vicia*

Taxa	Distribution
Sect. <i>Atossa</i>	Europe, North & West Asia
Ser. <i>Pseudovicilla</i>	Central, South & East Europe
Ser. <i>Truncatulae</i>	South East Europe, Northeast Mediterranean, South C.I.S. & North Iran
Ser. <i>Atossa</i>	Europe and North Asia
Sect. <i>Microcarinae</i>	Syria (endemic)
Sect. <i>Hypechusa</i>	Europe, West Asia & North Africa
Ser. <i>Hyrchanicae</i>	West Asia
Ser. <i>Hypechusa</i>	Europe, West Asia & North Africa
Sect. <i>Peregrinae</i>	South Europe, West Asia & North Africa
Sect. <i>Wiggersia</i>	Europe, West Asia & Algeria
Sect. <i>Vicia</i>	Europe, Asia & North Africa
Ser. <i>Vicia</i>	Europe, Asia & North Africa
Ser. <i>Grandiflorae</i>	East Europe & West Asia
Sect. <i>Bithynicae</i>	Europe, West Asia & Algeria
Sect. <i>Narbonensis</i>	Europe, West Asia & North Africa
Ser. <i>Rhombocarpae</i>	Turkey (endemic)
Ser. <i>Narbonensis</i>	Europe, West Asia & North Africa
Sect. <i>Faba</i>	Only known in cultivation

intraspecific variation suggests that the three series are, taxonomically, relatively remote.

The isoflor map for sect. *Hypechusa*, Figure 4.4, shows that the centre of diversity is focused on the fertile crescent countries of Southwest Asia. The distributional pattern of two series within sect. *Hypechusa* is also centred on Southwest Asia, although ser. *Hypechusa* stretches more westerly, to encompass Southern Europe, than ser. *Hyrchanicae*. The section seems, both morphologically and geographically, to form a cohesive taxonomic unit.

A similar position is indicated by the isoflor map, Figure 4.5, for sect. *Peregrinae*. The distribution of the three species included is concentrated in Southwest Asia, with *V. aintabensis* and *V. michauxii* restricted to this area. One species, *V. peregrina*, is much more widespread than the others and extends the distribution of the section to Europe and North Africa.

The two species of sect. *Wiggersia*, whose isoflor map is shown in Figure 4.6, shows a similar distribution pattern and centre of diversity to the two sections discussed previously. *V. cuspidata* is restricted to Southeast Europe and Southwest Asia and *V. lathyroides* broadens the distribution of the section to include North Africa and Western Europe.

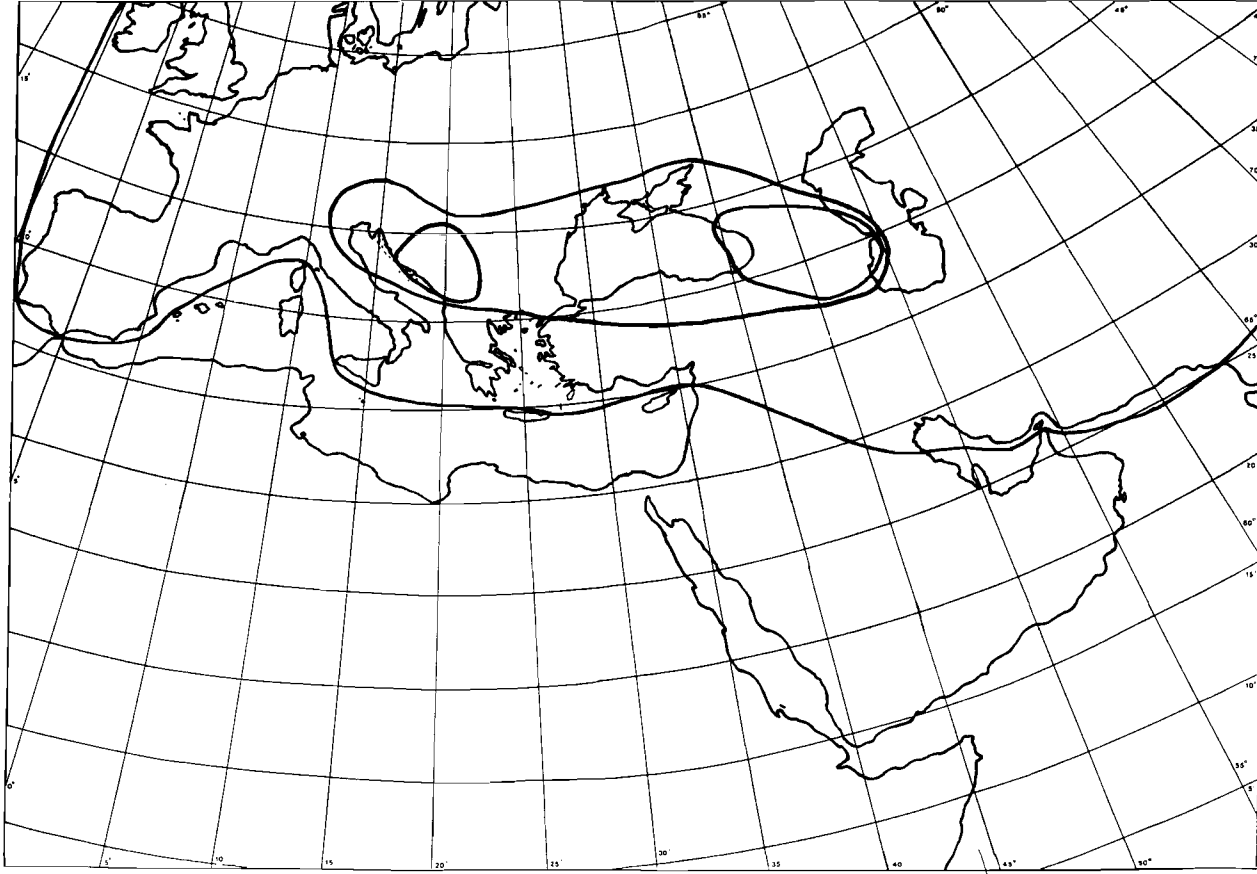


Figure 4.3. Isoflor map for *Vicia* sect. *Atossa*.

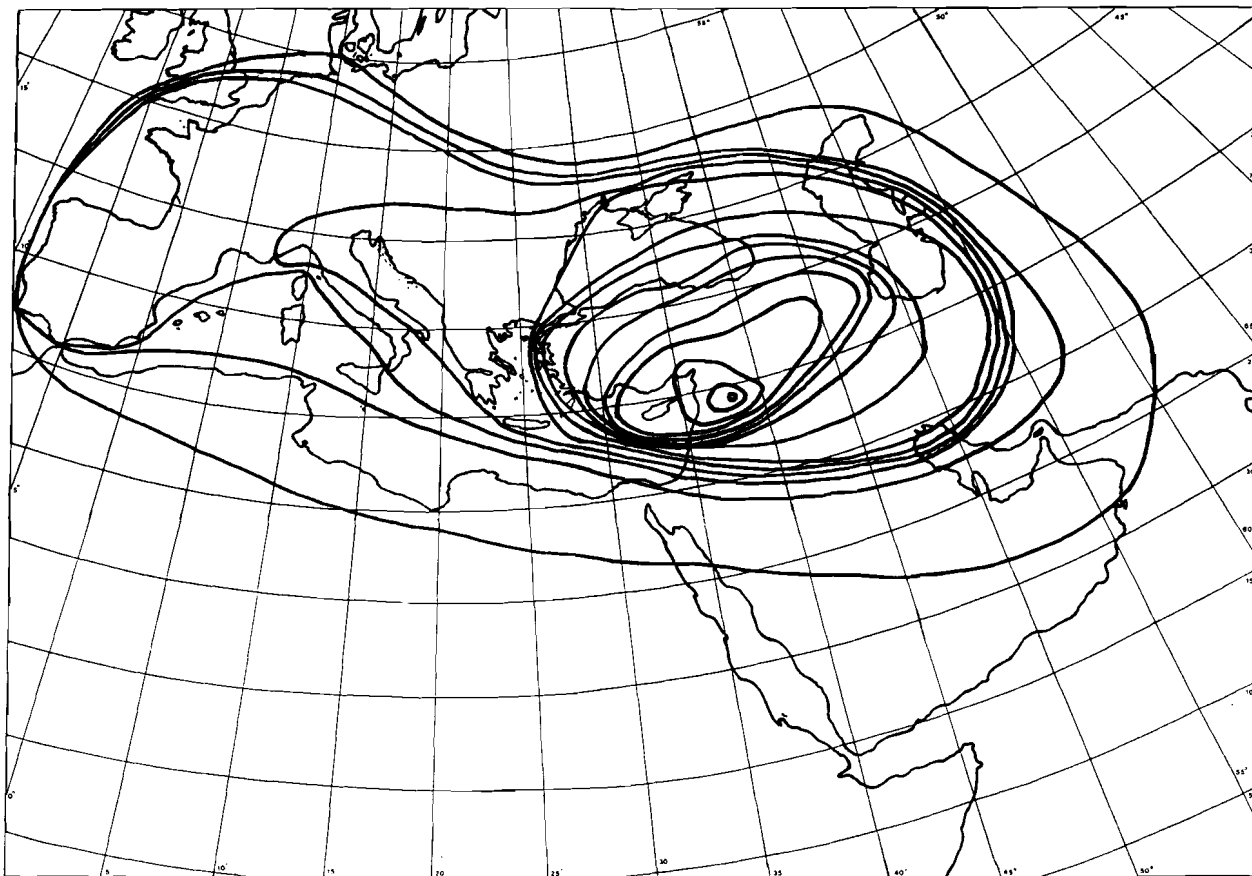


Figure 4.4. Isoflor map for *Vicia* sect. *Hypechusa*.

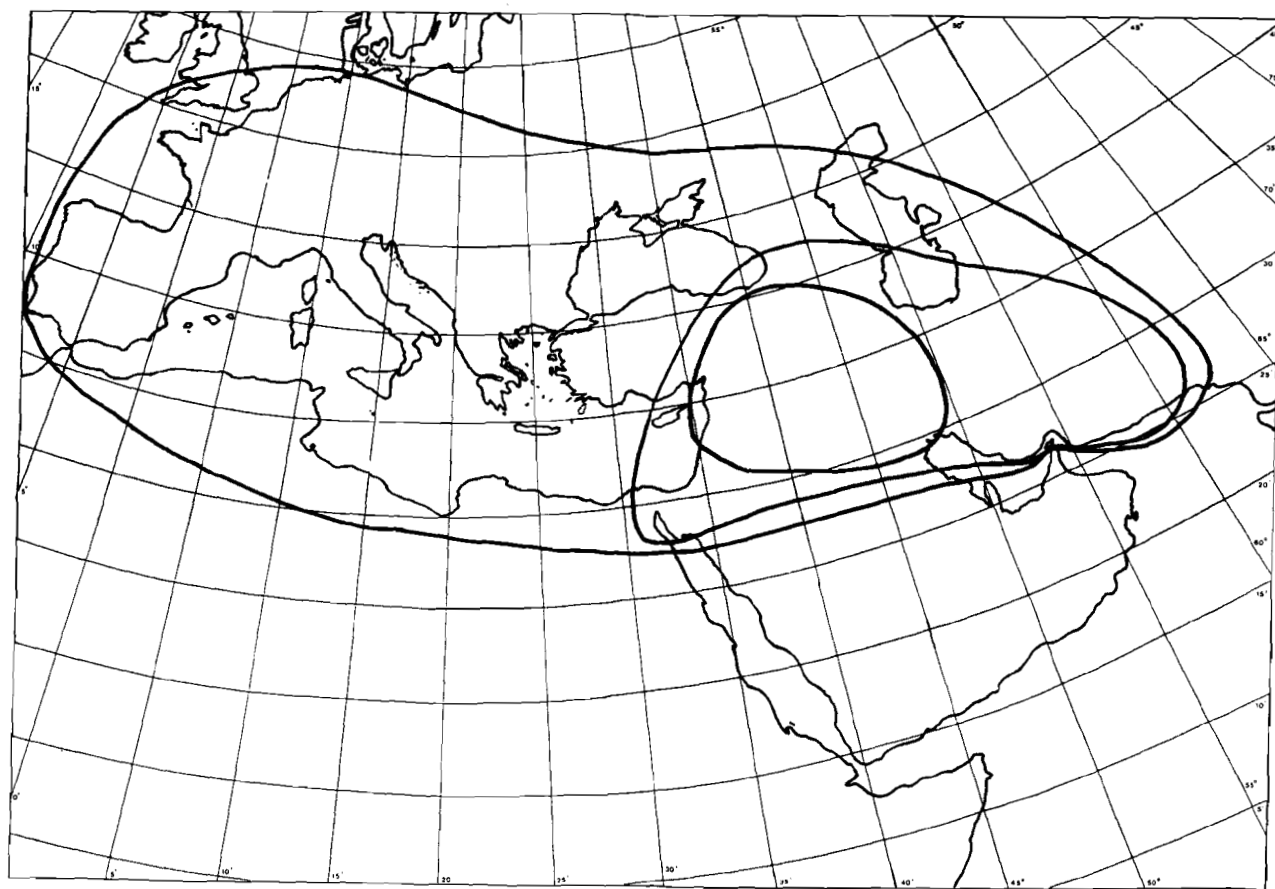


Figure 4.5. Isoflor map for *Vicia* sect. *Peregrinae*.

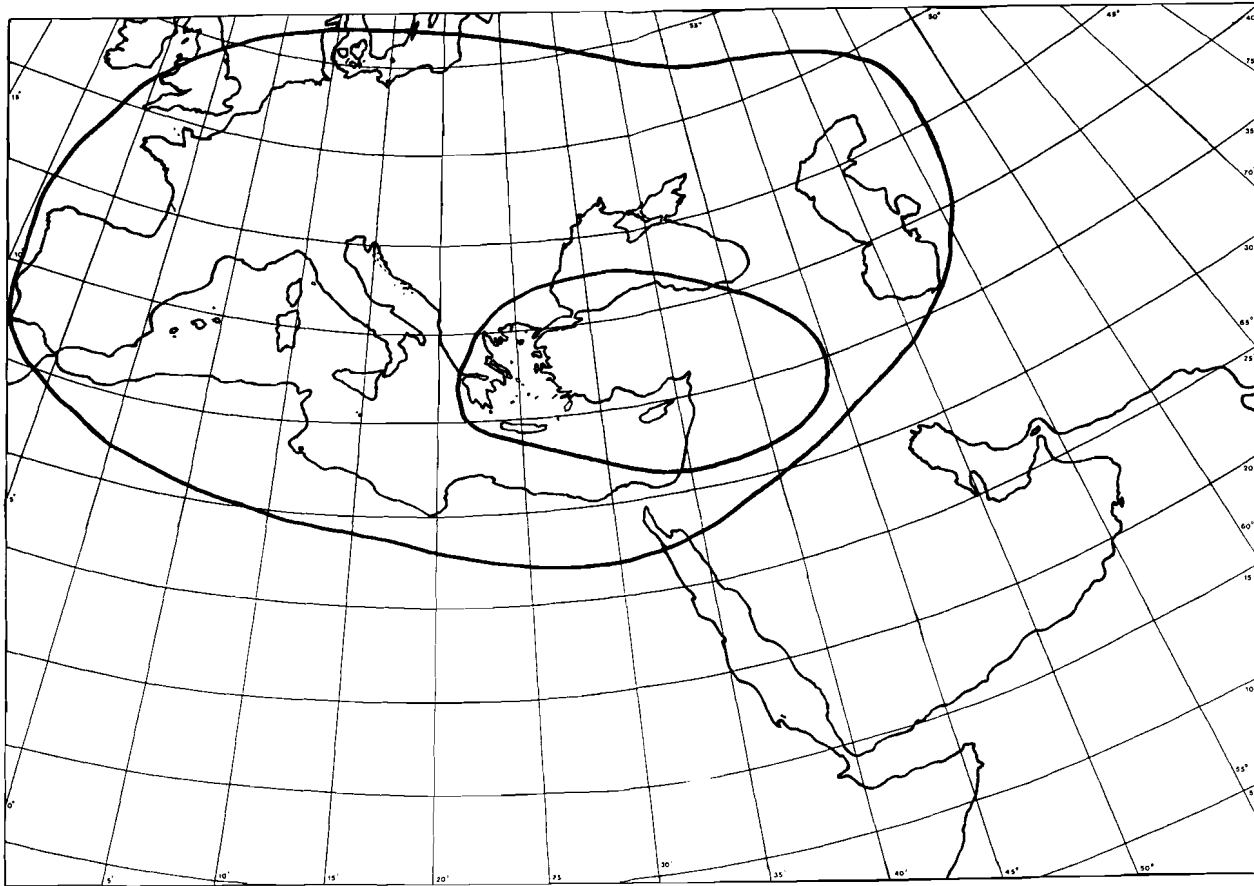


Figure 4.6. Isoflor map for *Vicia* sect. *Wiggersia*.

Section *Vicia sensu* Maxted (1993) is composed of five species, one of which is the pan-temperate and semitropical weed common vetch or tare, *V. sativa*. The discussion of the distribution of this section is dominated by the distribution of *V. sativa*. As *V. sativa* is distributed widely, the precise native distribution of the species is unknown. However, based on the distributional pattern for the subgenus as a whole and, particularly, for sect. *Vicia*, *V. sativa* seems most likely to have originated in Southern Europe or Southwest Asia. Support for this hypothesis is provided by the distribution of three of the subspecies of *V. sativa* (*amphicarpa*, *incisa* and *macrocarpa*), which are all endemic to this region.

The isoflor map for sect. *Vicia*, Figure 4.7, indicates that the centre of distribution is Southeast Europe and Southwest Asia, with two restricted species (*V. pyrenaica* and *V. qatmensis*) forming isolated pockets of distribution in the Iberian Peninsula and Syria. The discontinuous distribution of these four species could suggest that they have evolved separately from a widely distributed *V. sativa*-like form. This would explain the distribution of *V. pyrenaica*, the only *Vicia* subgenus *Vicia* species to be endemic to the Iberian Peninsula. The morphological similarity between this species and *V. sativa* suggests that it is simply a form of the latter that has evolved sufficiently to warrant specific distinction, possibly due to geographic isolation resulting from its restriction to high alpine habitats.

Sect. *Narbonensis* is composed of four species which are restricted to Southwest Asia and three species which are more widely distributed throughout Europe, West Asia and North Africa. So not surprisingly, the isoflor map for the section, Figure 4.8, indicates that the section's centre of diversity and possible origin is in Southwest Asia. This hypothesis is supported, at least for *V. narbonensis*, by archaeological evidence (Schultze-Motel 1972; Renfrew 1973) from neolithic levels at Beidha in Israel.

The sectional distribution and distributional concentrations, described above, provide limited assistance in clarifying subgenus *Vicia* phytogeographical relationships, as all nine sections have overlapping distribution patterns with roughly the same centre of diversity. The sectional distributional pattern does, however, indicate that the subgenus *Vicia* sections are more closely related to each other than they are to some of the sections of the second *Vicia* subgenus, *Vicilla*, which has sections whose distribution is endemic to the Americas, e.g. *Americanae*, *Leucophaeae* and *Australes*.

The natural distribution of subgenus *Vicia* species is restricted to Europe, North and West Asia and North Africa. In interpreting this distribution, it is worth noting the remarks of Brenan (1965):

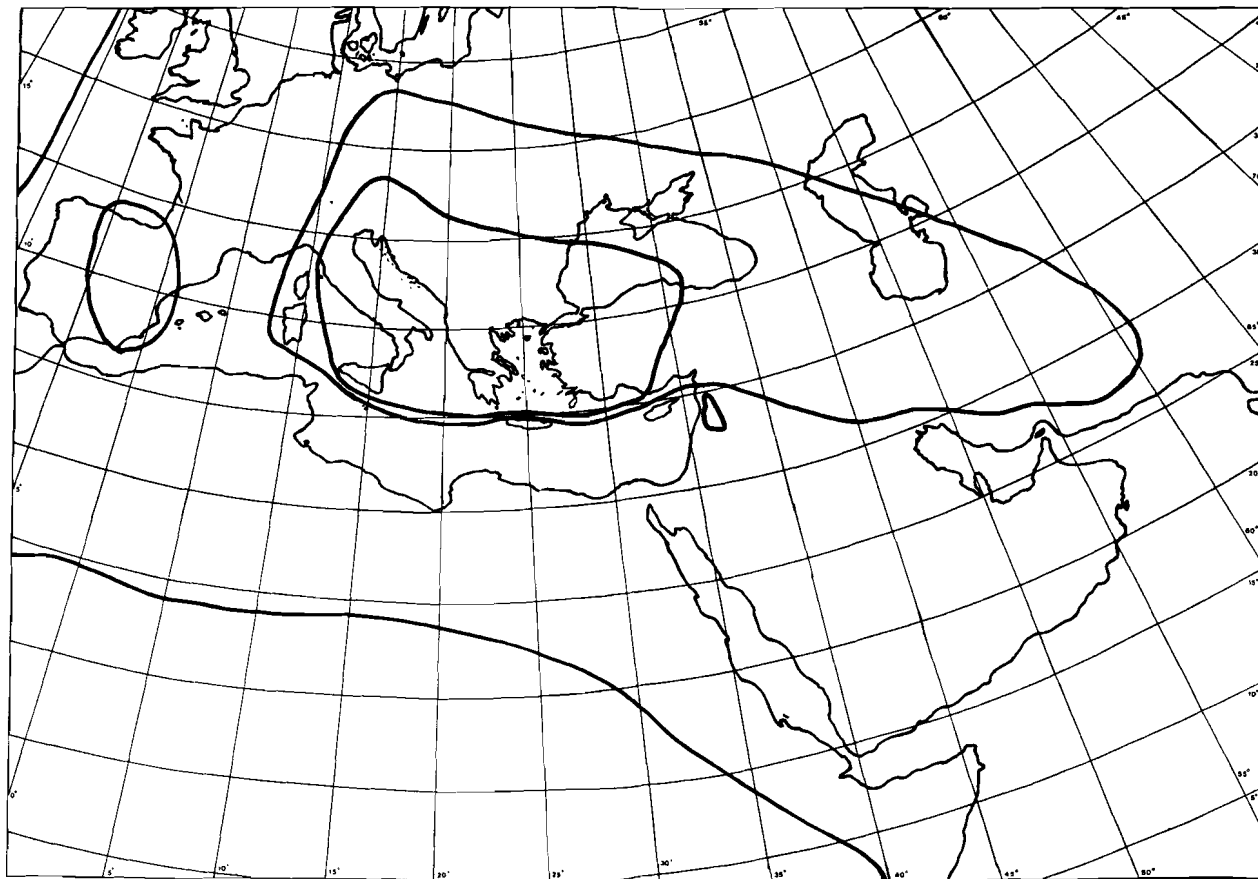


Figure 4.7. Isoflor map for *Vicia* sect. *Vicia*.

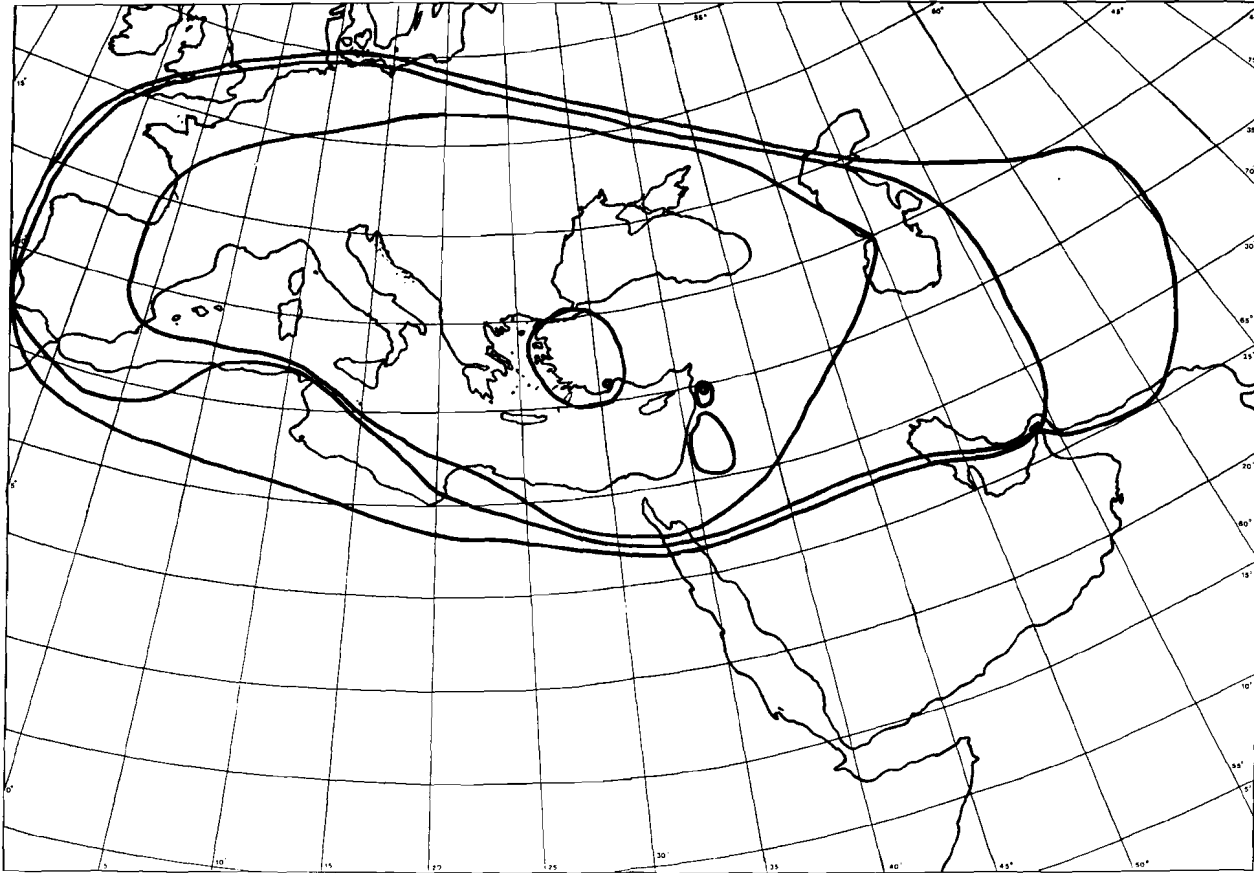


Figure 4.8. Isoflor map for *Vicia* sect. *Narbonensis*.

“The genus is a particularly useful unit for studies of this sort (Phytogeographical), since the number of species of a given genus occurring in different parts of the world often indicate its centre of origin and directions of spread.”

The derivation of centres of origin are just as likely to be reflected in the distribution of subgeneric taxa. Thus it can be argued on the basis of relative species concentrations (as indicated by the isoflor maps) that the centre of origin for subgenus *Vicia* is Southeastern Europe and Southwestern Asia. Over half of the included taxa are endemic to these areas. Taxa of the subgenus have subsequently spread west and north, and, to a lesser extent, east and south from this area.

This region is very important floristically as it is at the cusp of three major temperate phytogeographical regions, Euro-siberian, Mediterranean and Irano-turanian (Takhtadjan, 1969). Stebbins (1967) points out that if regions with different environmental and floristic characters are juxtaposed, it may act as a catalyst to evolution. Subgenus *Vicia* would appear to provide a good example of a taxon evolving in such a ‘melting pot’.

There is evidence, however, that taxa with centres of distribution in the Balkans, Southwest and Southeast Asia are generally centred in these areas due to climatic deterioration and floristic movement from more northerly distributed Floras (Takhtadjan 1969). The Boreal-tertiary flora was driven south by the Quaternary Ice Age towards these three floristic refugia in the south. Kupicha (1974) concludes that *Vicia* (and by implication subgenus *Vicia*) evolved in the early tertiary and the centre of origin is likely to have been much further north than is indicated by contemporary concentrations of taxa.

Stebbins (1967) argues that the most genotypically and phenotypically plastic species (e.g. *V. sativa*) will have evolve rapidly away from the centre of origin, while the more primitive species will remain in the centre. On the contrary, however, Willis (1921) argues that evolution and plant dispersal occur at the same rate. Therefore the oldest and most primitive species are most widespread and are currently found on the distributional periphery, while the most recently evolved species occur at the centre of origin and are localized. It would explain the widespread distribution of *V. sepium*, which is regarded as a primitive member of subgenus *Vicia*, because of its perennial habit, relatively long peduncle and numerous flowers per peduncle. However, this hypothesis clearly offers no explanation for the distribution of *V. sativa*, which is regarded as an advanced species. The fact that three sections (*Atossa*, *Vicia* and *Narbonensis*) have a significantly wider distribution indicates that these are possibly more advanced (or more primitive if Willis’ thesis is followed) than the sections which are largely endemic to the centre of

diversity of the subgenus.

4.6 Present conservation of *Vicia* subgenus *Vicia*

Before establishing conservation priorities and a collection strategy for *Vicia* subgenus *Vicia*, current attempts to conserve the taxa of the subgenus must be considered.

Genetic resources may either be conserved *in situ* or *ex situ*. There are no *in situ* reserves specifically designated as reserves for the conservation of vetch germplasm, but it can be assumed that the reserves that exist in the Eastern Mediterranean, the taxon's centre of diversity, contain a broad range of vetch material. It has not been possible to quantify the amount of vetch material that is currently actively conserved *in situ*. Few reserves have check-lists of the species included and the lists that have been produced are not widely distributed. It is easier, however, to assess *ex situ* holdings, as these are more commonly published as catalogues or are included in germplasm databases.

Table 4.3 summarizes the *ex situ* holdings of *Vicia* subgenus *Vicia*; cultivated material of *V. faba* is excluded as it is held so widely. The table was compiled using data provided by IPGRI, GRIN (United States Department of Agriculture—the main USDA *Vicia* collection is held at the Western Region Plant Introduction Station, Washington State University, Pullman, WA 99164-6402), the N.I. Vavilov Institute of Plant Industry, St. Petersburg, USSR) and the Viciae Genebank at Southampton University.

The IPGRI-designated *Vicia* genebank is held by the Istituto del Germoplasma, Via G. Amendola 165/A, Bari, Italy, but no information on genebank holdings was available. The listing provided is not fully comprehensive, as there are without doubt other *ex situ* collections that contain *Vicia* subgenus *Vicia* material. The list does, however, cover four of the largest collection and so provides a sound framework for the formulation of a future conservation strategy for the subgenus.

The systematic Viciae collecting programme, initiated by the IBPGR Forage Working Group (IBPGR 1985a) and undertaken by members of the Viciae Database Project, Southampton, UK, has resulted in the most extensive *ex situ* collection of *Vicia* subgenus *Vicia* germplasm. The collection is nearly taxon comprehensive. It contains material of 63 of the 68 taxa in the subgenus. A complete duplicate of the material is held at the Genetic Resources Unit of the International Centre for Agricultural Research in Dry Areas. Both genebanks will freely supply germplasm with associated passport data. Each accession collected as a result of the IBPGR/Viciae Project initiative is also duplicated in the national genebank of the country where the accession was collected.

Table 4.3. Listing of *ex situ* germplasm holdings of *Vicia* subgenus *Vicia*

Taxon	Institute code	Access. nos.	Provenance access.	Sample avail.	Pass. avail.
<i>V. abbreviata</i>	GBR001	11	SUN(3)	F	A
	SUN001	1	SUN(1)	-	-
<i>V. aintabensis</i>	GBR001	10	SYR(6),TUR(4)	F	A
<i>V. anatolica</i>	GBR001	1	TUR(1)	F	A
	SUN001	2	SUN(2)	-	-
<i>V. assyriaca</i>	GBR001	5	TUR(5)	F	A
<i>V. balansae</i>	GBR001	5	SUN(3)	F	A
	SUN001	1	SUN(1)	-	-
<i>V. barbazitae</i>	GBR001	3	TUR(3)	F	A
var. <i>barbazitae</i>	-	-	-	-	-
var. <i>incisa</i>	-	-	-	-	-
<i>V. bithynica</i>	ETH013	3	GRC(1),ITA(2)	F	A
	GBR001	22	GBR(4), PRT(1), ITA(1), SYR(10), UR(5), SUN(1)	F	A
	GBR004	3	-	F	-
	SUN001	2	SUN(2)	-	-
<i>V. ciliatula</i>	GBR001	1	SUN(1)	F	A
<i>V. cuspidata</i>	GBR001	49	SYR(18), TUR(31)	F	A
<i>V. dionysiensis</i>	GBR001	3	SYR(3),	F	A
<i>V. eristalioides</i>	GBR001	2	TUR(2)	F	A
<i>V. esdraelonensis</i>	-	-	-	-	-
<i>V. galeata</i>	GBR001	1	TUR(1)	F	A
<i>V. galilaea</i>	GBR001	2	ISR(2)	F	A
var. <i>galilaea</i>	GBR001	3	ISR(3)	F	A
var. <i>faboidea</i>	GBR001	1	ISR(1)	F	A
<i>V. grandiflora</i>	GBR001		BGR(1), ITA(1)	F	A
	USA005	2	-	F	A
	GBR001	6	TUR(6)	F	A
var. <i>grandiflora</i>	GBR001	1	TUR(1)	F	A
<i>V. hyaeniscyamus</i>	GBR001	9	SYR(9)	F	A
<i>V. hybrida</i>	GBR001	97	SYR(53), TUR(44)	F	A
	SUN001	2	SUN(2)	-	-
	USA022	3	GRC(3)	F	A
<i>V. hyrcanica</i>	GBR001	6	SUN(6)	F	A
	SUN001	4	SUN(4)	-	-
	USA022	1	IRN(1)	F	A
<i>V. johannis</i>	GBR001	11	SUN(1), SYR(3), TUR(7)	F	A
	SUN001	1	SUN(1)	-	-
var. <i>ecirrhosa</i>	-	-	-	-	-
var. <i>procumbens</i>	GBR001	13	SYR(7), TUR(6)	F	A
var. <i>johannis</i>	GBR001	7	SYR(5), TUR(2)	F	A
<i>V. kalakhensis</i>	GBR001	6	SYR(6),	F	A
<i>V. lathyroides</i>	ETH013	1	-	F	A

Table 4.3 continued. Listing of *ex situ* germplasm holdings of *Vicia* subgenus *Vicia*

Taxon	Institute code	Access. nos.	Provenance access.	Sample avail.	Pass. avail.
	GBR001	27	ITA(1), PRT(1), SYR(13), TUR(12)	F	A
	GBR004	1	-	F	-
	USA022	2	GER(1), ESP(1)	F	A
<i>V. lutea</i>	ESP004	12	ESP(1)	F	-
	ETH013	2	GRC(1)	F	A
	GBR001	19	PRT(18), TUR(1)	F	A
	GBR004	2	-	F	-
	USA022	8	AFG(1), CAN(2), GER(1), GRC(1), ISR(1), PRT(1), TUR(1)	F	A
subsp. <i>lutea</i>	GBR001	2	ITA(1), PRT(1)	F	A
subsp. <i>vestita</i>	GBR001	24	SYR(5), TUR(19)	F	A
<i>V. melanops</i>	BGR001	5	-	F	-
var. <i>melanops</i>	GBR001	7	TUR(7)	F	A
var. <i>loiseaui</i>	GBR001	1	ITA(1)	F	A
<i>V. michauxii</i>	GBR001	12	SUN(10), TUR(2)	F	A
	SUN001	2	SUN(2)	-	-
<i>V. mollis</i>	GBR001	18	SYR(6), TUR(12)	F	A
<i>V. narbonensis</i>	CSK003	2	-	-	-
	DEU001	5	-	F	-
	ESP004	8	ESP(8)	F	-
	FRA043	1	-	-	-
	GBR001	46	SYR(17), TUR(29)	F	A
	SUN001	3	SUN(3)	-	-
	USA022	26	BEL(1), CAN(7), ESP(2), IRN(1), ISR(3), ITA(1), PAK(1), SYR(1), SUN(1)	TUR(8), F	A
var. <i>salmonea</i>	GBR001	16	SYR(15)	F	A
var. <i>jordanica</i>	GBR001	5	SYR(3)	F	A
var. <i>affinis</i>	GBR001	17	SYR(11), TUR(6)	F	A
var. <i>aegyptiaca</i>	GBR001	4	-	F	A
var. <i>narbonensis</i>	GBR001	18	SYR(3), TUR(4)	F	A
<i>V. noeana</i>	GBR001	14	SYR(2), TUR(12)	F	A
subsp. <i>megalodonta</i>	GBR001	1	-	F	A
subsp. <i>noeana</i>	GBR001	1	-	F	A
<i>V. oroboides</i>	GBR001	4	YUG(1)	F	A
<i>V. pannonica</i>	BRA021	1	-	F	A
	CSK003	15	-	-	-
	CSK090	15	-	F	-
	CSK091	16	-	F	-

Table 4.3 continued. Listing of *ex situ* germplasm holdings of *Vicia* subgenus *Vicia*

Taxon	Institute code	Access. nos.	Provenance access.	Sample avail.	Pass. avail.
	DEU001	6	-	F	-
	ESP004	5	PRT(2), ESP(3)	F	-
	HUN002	4	-	F	-
	USA022	17	AUS(12), BEL(2), ITA(1), SUN(2)	F	A
subsp. <i>striata</i>	GBR001	1	GER(1)	F	A
subsp. <i>pannonica</i>					
	DEU001	1	-	F	-
	DEU146	8	-	F	-
	GBR001	3	SUN(3)	F	A
<i>V. peregrina</i>	ESP004	1	ESP(1)	F	-
	ETH013	2	GRC(2)	F	A
	GBR001	129	SUN(10), SYR(70), TUR(49)	F	A
	GBR004	2	-	F	-
	SUN001	2	SUN(2)	-	-
	USA022	5	ESP(1), IRN(1), ISR(1), TUR(2)	F	A
<i>V. pyrenaica</i>	GBR001	2	FRA(2)	F	A
<i>V. qatmensis</i>	GBR001	7	SYR(7)	F	A
<i>V. sativa</i>	ALB007	19	ALB(3), ITA(15), ARG(1)	F	A
	BGR001	164	-	F	A
	BRA010	1	-	F	A
	BRA021	5	-	F	A
	CSK003	141	-	-	-
	CSK090	220	-	F	-
	CSK091	214	-	F	-
	CYP001	67	CYP(67)	F	-
	DEU001	80	BUL(1), CAN(1), GER(2), ESP(1), HUN(1), ISR(1), ITA(1), POL(2), SWE(1), TUR(1), SUN(19)	F	-
	DEU146	2	-	F	-
	ESP002	720	-	F	A
	ESP004	343	AUS(4), CSK(20), ESP(298), GER(299), GRC(12), HUN(13), ITA(1), PRT(99), USA(1)	F	-
	ESP007	560	ESP(560)	F	-
	ESP011	10	-	-	-
	ESP020	936	-	F	-
	ETH013	192	CYP(5), GBR(2), ESP(4),		

Table 4.3 continued. Listing of *ex situ* germplasm holdings of *Vicia* subgenus *Vicia*

Taxon	Institute code	Access. nos.	Provenance access.	Sample avail.	Pass. avail.
			ETH(22), FRA(2), GER(1), GRC(15), HUN(4), IRN(3), IRQ(1), ITA(11), LBN(1), TUR(3)	F	A
	FRA051	26	-	-	-
	GBR001	30	PRT(3), TUR(26), YUG(1)	F	A
	GBR004	16	-	F	-
	GRC005	30	-	F	A
	GRC006	664	-	-	-
	HUN002	20	-	F	-
	JPN003	5	-	F	A
	PRT005	13	PRT, ESP	F	-
	ROM007	5	-	R	A
	SUN001	47	SUN(47)	-	-
	SWE002	4	-	-	-
	SYR003	-	-	F	-
	USA005	6	-	F	-
	USA022	398	AFG(1), ARG(1), AUS(12), BEL(37), BGR(55), CHE(1), CHN(1), CYP(29), CSK(32), DZA(4), ETH(1), ESP(14), FRA(15), GBR(1), GER(42), GRC(13), HUN(32), IND(2), IRN(17), ISR(2), ITA(13), JPN(10), JOR(2), LBN(3), MEX(3), MCO(5), NLD(2), PAK(2), POL(3), PRT(8), SWE(4), SYR(6), SUN(24), TUR(78), URY(1), USA(5), YUG(7), ZAF(1)	F	A
	ZAF001	2	-	F	-
subsp. <i>amphicarpa</i>	AUS006	2	-	F	P
	ESP004	1	ESP(1)	F	-
	GBR001	25	SYR(22), TUR(3)	F	A
	USA022	7	AUS(5), CAN(1), TUR(1)	F	A
subsp. <i>devia</i>	-	-	-	-	-
subsp. <i>incisa</i>	GBR001	2	TUR(1)	F	A
subsp. <i>macrocarpa</i>	GBR001	3	ITA(1), TUR(1)	F	A
subsp. <i>nigra</i>	GBR001	127	FRA(1), GBR(15), ITA(1),		

Table 4.3 continued. Listing of *ex situ* germplasm holdings of *Vicia* subgenus *Vicia*

Taxon	Institute code	Access. nos.	Provenance access.	Sample avail.	Pass. avail.
			PRT(7), SUN(12), SYR(61), TUR(28), YUG(2)	F	A
	SUN001	20	SUN(20)	-	-
	USA022	63	AFG(3), ARG(1), AUS(2), BEL(2), BGR(1), CYP(1), CSK(2), ESP(4), GRC(1), HUN(1), IRN(5), ISR(10), JPN(9), PAK(2), PRT(1), ROM(3), SUN(8), TWN(1), TUR(4), USA(1), YUG(1)	FRA(1), URY(1), F	A
subsp. <i>sativa</i>	DEU001	23	GRC(1), SUN(19)	F	-
	DEU146	107	-	F	-
	GBR001	172	PRT(18), SUN(15), SYR(73), TUR(66)	F	A
	USA022	46	BEL(2), BGR(7), CSK(8), FIN(1), FRA(4), GBR(1), GER(4), HUN(6), NLD(1), POL(3), PRT(2), ROM(1), SUN(5)	ISR(1), F	A
<i>V. sepium</i>	ETH013	5	CHE(2), CSK(1), GER(1)	F	A
	GBR001	7	FIN(1), FRA(3), GBR(1), ITA(1), YUG(1)	F	A
	GBR004	2	-	F	-
	USA022	1	IRL(1)	F	A
var. <i>sepium</i>	GBR001	6	SUN(6)	F	A
var. <i>ericalyx</i>	GBR001	8	GBR(8)	F	A
var. <i>montana</i>	-	-	-	-	-
<i>V. sericocarpa</i>	GBR001	48	SYR(38), TUR(10)	F	A
<i>V. serratifolia</i>	GBR001	16	PRT(1), SYR(3), TUR(8), YUG(4)	F	A
<i>V. tigridis</i>	GBR001	1	SYR(1)	F	A

Institute codes are detailed in Appendix V. Accession nos. refers to the number of accessions held in that genebank of that taxon. Provenance of access. refers to the number of accessions held in that genebank of that taxon for each country. Note the total number of accessions can be higher than the total number of accessions with their provenance indicated, because some accessions have an unknown provenance. Three-letter ISO country codes are used to indicate country of provenance and the number in brackets indicates the accessions from that country. Sample avail. refers to the availability of the accessions to potential users: F = freely available; R = restricted availability; N = not available. Passport avail. refers to the availability of accession passport data: A = available; P = partially available; N = not available. This table was produced by summarizing data provided by IPGRI, GRIN (United States Department of Agriculture), the N.I. Vavilov Institute of Plant Industry, St. Petersburg, USSR) and the Viciae Genebank at Southampton University.

4.7 Future collection and conservation priorities

Collection and conservation priorities are, at least partially, formulated on the basis of the comparative threat of genetic erosion faced by a particular plant group in a particular region. Changes in agricultural practices and industrialization have undoubtedly led to extensive genetic erosion in the Eastern Mediterranean, the centre of diversity of the subgenus. However, the fact that the majority of *Vicia* subgenus *Vicia* species are weedy, colonizing species often found in habitats disturbed by man and that there has recently been an extensive conservation programme stimulated by IPGRI, suggests that the subgenus, as a whole, is unlikely to suffer serious genetic erosion in the immediate future. However, three points should be stressed:

1. we do not know how well the accessions collected during the recent IPGRI / Viciae Project initiative reflect the genetic composition of the *Vicia* genepool as a whole;
2. although the group as a whole is not immediately threatened by genetic erosion, certain taxa do require active conservation management;
3. if specific threats to the genepool arise (e.g. dam construction in areas of high taxon concentration or major shifts in agricultural policy, etc.) then conservation policy will need to be reviewed.

4.7.1 *Ex situ* conservation priorities

Having concluded that *Vicia* taxa are not seriously threatened by genetic erosion, the conservation and collection of *Vicia* germplasm should be encouraged within the context of international and national forage legume conservation programmes. National plant genetic resource institutes should be encouraged to undertake targeted collecting and conservation programmes for endemic, wild species and landrace material of *V. faba* subspecies *paucijuga*, *V. narbonensis* and *V. sativa*.

As a low-input, forage crop, the cultivation of *V. sativa* subspecies *sativa* is likely to increase in future years. All the taxa of *Vicia* section *Vicia* should therefore be systematically conserved because of their potential for gene transfer to the crop. There is a subspecies of *V. sativa*, subspecies *devia*, an endemic of Madeira, which is not currently conserved *ex situ* and an effort should be made to make this taxon available to breeders. The French and Spanish alpine species, *V. pyrenaica*, which is a perennial form of *V. sativa*, should also be given a higher conservation priority. *V. pyrenaica* is not imminently threatened by extinction, largely due to a habitat preference for altitudes between 1100 and 2400 m, where it is currently unlikely to be affected by anthropomorphic factors. However, germplasm of this species is not widely conserved *ex situ*. It is therefore effectively unavailable to breeders, who may be interested in a perennial form of *V. sativa*, as a potential gene

donor to the crop or for forage exploitation in its own right and so should be collected.

Material of the close relatives of *V. faba* has been thoroughly conserved *ex situ* during the recent IPGRI / Viciae Project initiative. However, the three rarest taxa require *in situ* as well as *ex situ* conservation. One species, *V. galilaea*, was not encountered during the IPGRI / Viciae Project initiative. This rare species is primarily located in Northern Israel and Western Turkey and it is recommended that the National Genetic Resources programmes, in both these countries, should monitor and ensure that this species is effectively conserved.

The IPGRI/Viciae Project initiative ensured that the taxa of *Vicia* subgenus *Vicia* are well represented in international collections, but the genetic variation inherent in this conserved material could be enhanced by international collecting missions to isolated areas not previously visited. Two such missions, to Northeast and to Southeast Turkey, are suggested. Both missions should have a duration of twelve weeks so that the collection can span both the flowering and fruiting seasons. Exact timing of the mission is vital to catch both flowering and fruiting for the species in the areas to be covered, but to avoid unproductive delays or arriving at sites too late for collection purposes.

The value of each accession is diminished unless it is accurately identified and does not contain a mixture of species. This presents a particular problem when collecting *Vicia* species where several species are often found entangled together and leading at maturity to the crisp shattering plants and pods that are not easily distinguished or disentangled. Experience has shown that these problems can be overcome by visiting each site twice, first at flowering time and then again at fruiting. During the first visit, sites where *Vicia* are plentiful are located, the taxa present are identified, and rhizobia and voucher specimens are collected. During the second visit to the site, the populations encountered are familiar and so identification of the brittle plant remnants is simpler. This procedure is recommended for all *Vicia* collection missions.

Northeast Turkey

Species expected	<i>V. balansae</i> , <i>V. abbreviata</i> , <i>V. sepium</i> , <i>V. hyrcanica</i> , <i>V. noeana</i> , <i>V. ciliatula</i> , <i>V. pannonica</i> , <i>V. peregrina</i> , <i>V. sativa</i> , <i>V. grandiflora</i> , <i>V. johannis</i> , <i>V. narbonensis</i> and <i>V. faba</i> .
Collaboration	Aegean Agricultural Research Institute, P.O. Box 9, Menemen, Izmir, Turkey.
Vilayets covered	Samsun, Ordu, Giresun, Trabzon, Gümüşane, Rize, Erzurum, Artvin and Kars.

Timing	May to July (precise timing will depend on individual seasons and exact plant locations).
<u>Southeast Turkey</u>	
Species expected	<i>V. assyriaca</i> , <i>V. hyrcanica</i> , <i>V. noeana</i> , <i>V. anatolica</i> , <i>V. mollis</i> , <i>V. hybrida</i> , <i>V. sericocarpa</i> , <i>V. michauxii</i> , <i>V. aintabensis</i> , <i>V. peregrina</i> , <i>V. lathyroides</i> , <i>V. sativa</i> , <i>V. grandiflora</i> , <i>V. johannis</i> , <i>V. narbonensis</i> and <i>V. faba</i> .
Collaboration	Aegean Agricultural Research Institute, P.O. Box 9, Menemen, Izmir, Turkey.
Vilayets covered	Diyarbakir, Mardin, Siirt, Hakkari, Van, Bitlis, Muç and Agri (starting in the dry, Southern Vilayets).
Timing	Mid-April to mid-July (precise timing will depend on individual seasons and exact plant locations).

4.7.2 *In situ* conservation priorities

The phytogeographic study has shown that the highest concentration of *Vicia* subgenus *Vicia* taxa is in the Eastern Mediterranean region. This region is, however, threatened by genetic erosion (IBPGR 1985a) and there is a clear need to establish a series of *in situ* reserves throughout the region to conserve *Vicia* and other forage species. Specifically, reserves should be established or maintained in Turkey, Syria, Lebanon, Israel, Iraq, Iran and the Caucasian Republics. As noted in the conspectus, the subgenus taxa show diverse habitat preferences ranging from shaded woodland to arid steppe; the distinct ecogeographic preferences of individual taxa must be considered when considering potential sites for reserves.

These forage reserves will aid in the conservation of the full range of forage legume and grass germplasm. However, within *Vicia* subgenus *Vicia*, there are some restricted endemic taxa which show specific ecogeographic preference and, due to changing environment management, these are currently threatened with extinction. The seven most geographically restricted species are listed in Table 4.4.

The species most seriously threatened by extinction are those restricted to Syria, Lebanon, Turkey and Israel; and the highest concentration of potentially threatened taxa are located in Syria. To avoid the extinction of these species *in situ* reserves should be established, appropriately managed and the population levels of the threatened species monitored. It is recommended that four reserves should be established in Syria at: Ain Dinar, Al Hasakah (37 15 N, 42 20 E), Kessab town, Kessab (35 54 N, 35 56 E), Qal'at Al Hosn, Homs (34 46 N, 36 18 E) and Mimas, Djebel Druze (32 36 N, 36 43 E). *V. eristalioides* is largely known from the type collections made between Belin

and Cavas, Antalya province, Turkey (a single plant was found near Bodrum, Mugla province, Turkey in 1994). The type location is located within the Olimpos Beydaglari National Park. Currently extensive planting of conifers is being carried out within the reserve which will obviously threaten, if not eradicate, the type population.

Table 4.4. The geographically restricted species of *Vicia* subgenus *Vicia*.

Taxon	Country of origin	Localities	Ecological preference
<i>V. dionysiensis</i>	Syria	Djebel Druze	Moist meadows, heavy black soil
<i>V. esdraelonensis</i>	Israel, Syria, Turkey	Galilee, Djebel Druze, Urfa	Moist meadows, basaltic soil
<i>V. tigridis</i>	Syria	Ayn Diwar	Moist meadows, alluvial soil
<i>V. qatmensis</i>	Syria	Qatma, Kessab	Woodland margin, calcic brown and terra rossa soil
<i>V. eristalioides</i>	Turkey	Cavus, Bodrum	Limestone hillside, red Mediterranean soil
<i>V. kalakhensis</i>	Syria	Tell-Kalakh	Pasture margin, basaltic soil
<i>V. hyaeniscyamus</i>	Syria and Lebanon	Tell-Kalakh, Akkar and Andkett	Pasture margin, basaltic soil

Having established *ex situ* and *in situ* conservation priorities, there is a responsibility on the part of conservationists and plant breeders to ensure that the conserved material is fully utilized. The IPGRI / Viciaeae Project initiative has resulted in availability of relatively large seed stocks of a wide range of *Vicia* species. This material is, however, currently underexploited. It is rare that such a comprehensive stock of a relatively large genepool is available for research and utilization, especially for a group with potential to supply new ornamental, forage and fodder species, as well as the potential to supply genes to closely related, existing crop plants. The potential for utilization associated with *Vicia* germplasm has been discussed in detail by Ehrman

and Maxted (1990), Maxted *et al.* (1990), and Maxted *et al.* (1993), and some research has been stimulated, most notably at the International Centre for Agricultural Research in Dry Areas, but further utilization and exploitation is justified.

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7. APPENDICES

APPENDIX I

Herbaria visited or which loaned herbarium specimens.

Herbaria addresses are preceded by their codes (Holmgren *et al.* 1990).

- BM British Museum (Natural History), Cromwell Rd, London, SW7 5BD, United Kingdom.
- CAI Herbarium, Department of Botany, Faculty of Science, A'in Shams University, Abbassia, Cairo, Egypt.
- CAIM Herbarium, Flora and Phytotaxonomy Research, Ministry of Agriculture, Dokki, Cairo, Egypt.

- E Herbarium, Royal Botanic Garden, Inverleith Row, Edinburgh, EH3 5LR, United Kingdom.
- ERE Department of Plant Taxonomy & Geography, Botanical Institute of the Academy of Science, Yerevan 63, 375063, Armenia.
- G Herbarium, Conservatoire et Jardin botaniques de la Ville de Geneve, Case postale 60, CH-1292 Chambesy/GE, Switzerland.
- HUJ Herbarium, Department of Botany, The Hebrew University, Givath Ram, Jerusalem, Israel.
- K Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AB, United Kingdom.
- LE V.L. Komarov Botanical Institute of the Academy of Sciences, Prof. Popov Street 2, 197022, St. Petersburg, Russia.
- MADM Herbarium, Museu Municipal do Funchal, 9000, Funchal, Madeira, Portugal.
- MEXU Herbario Nacional de México, Departamento de Botánica, Instituto de Biología, Universidad Nacional Autónoma de México, 70-367, México 20, Distrito Federal, México.
- MO Herbarium, Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166, USA.
- MPU Institut de Botanique, 163 rue Anguste Broussonnet, 34000 Montpellier, France.
- OXF Fielding-Druce Herbarium, Department of Botany, University of Oxford, Botany School, South Parks Road, Oxford, OX1 3RA, United Kingdom.
- RNG Herbarium, Plant Science Laboratories, University of Reading, Whiteknights, Reading, RG6 2AS, United Kingdom.
- SPN Herbarium, Biology Department, University of Southampton, Southampton, SO9 3TU, United Kingdom.
- W Naturhistorisches Museum, Botanische Abteilung, Burgring 7, Postfach 417, A-1014, Wien, Austria.
- WIR Herbarium, N.I. Vavilov Institute of Plant Industry, Herzen Street 44, 190000, St. Petersburg, Russia.

APPENDIX II a.

Vicia subgenus *Vicia* synonymized checklist.

Key to generic codes:

<i>Vicia</i>	V.	Arachus	Ar.
Atossa	A.	Bona	B.
Cujunie	C.	Ervilia	E.
Ervum	Em.	Faba	F.
Hypechusa	H.	Lathyrus	L.
Orobus	O.	Phaseolus	P.
Potamogeton	Po.	Tuamina	T.
Vicioides	Vs.	Wiggersia	W.

V. abbreviata Fischer ex Sprengel, Pl. Min. Cog. Pug. Prim., 1(86): 50 (1813).
Syn: *V. truncatula* Fischer ex M. Bieb., Cat. Hort. Gorenk., 2: 72 (1812); *V. cassubica* M. Bieb., Fl. Taur.-Cauc., 3: 466 (1819); *V. truncatula* Fischer ex M. Bieb., Flora Taurico-caucasia, 3: 473 (1819); *O. caucasicus* Sprengel, Sys. Vege., 16(3): 261 (1826); *V. truncatula* Reichenb., Fl. Germ. Nov., 2: 250 (1832); *O. anomalus* Koch, Linnaea, 24: 96 (1851); *V. trichomera* Alef., Bonplandia, 9: 70 (1861); *V. chlorantha* Heuffel ex Nyman, Cons. Fl. Europ., 1: 209 (1878).

V. aintabensis Boiss. & Hausskn. ex Boiss., Fl. Orient. 2: 577 (1872). Syn: *V. peregrina* subsp. *aintabensis* (Boiss. & Hausskn. ex Boiss.) Ponert, Feddes Repert., 83(9-10): 634 (1973).

V. anatolica Turrill, Kew Bull., 1: 8 (1927). Syn: *V. hajastana* Grossh., Beih. Bot. Centralbl., 44(2): 224 (1930).

V. assyrica Boiss., Diagn. Pl. Or. Nov. ser. 1(9): 123 (1849). Syn: *V. hyrcanica* var. *brachyodonta* Bornm., Beih. Bot. Central., 19: 248 (1906); *V. brachyodonta* Bornm., Beih. Bot. Centralbl. 27(2): 346 (1910); *V. hyrcanica* subsp. *assyriaca* (Boiss.) Ponert, Feddes Repert., 83(9-10): 633 (1973).

V. balansae Boiss., Fl. Orient. 2: 569 (1872). Syn: *V. djimilensis* Koch ex Boiss., Fl. Or., 2: 569 (1872); *V. nordmanniana* Overin ex Trautv., Acta. Horti. Petropolitani, 6: 252 (1874); *V. truncatula* var. *major* Overin, Zap. Kavk. Obshch. Selsk. Khoz., 6: 252 (1874); *V. abbreviata* subsp. *balansae* (Boiss.) Stankevich, Bull. App. Bot. Genet. Pl. Breed., 117: 85-90 (1988).

- V. barbazitae* Ten. & Guss., Mem. Sulle Peregr., 165 (1838). Syn: *V. barbazitae* var. *concolor* Bornm., Symb. Fl. Anat. 208 (1940).
- V. barbazitae* var. *barbazitae* Ten. & Guss., Mem. Sulle Peregr., 165 (1838). Syn: *V. laeta* Cesati, Der Sudlichen Theilen von New-Greichenland, 280 (1858); *V. grandiflora* var. *laeta* (Cesati) Fiori, Nuov. Fl. Anal. Ital. 1: 923 (1923).
- V. barbazitae* var. *incisa* (Orph.) Boiss., Fl. Or., 2: 574 (1872). Syn: *V. incisa* Orph. ex Boiss., Fl. Or., 2: 574 (1872); *V. thessala* Spruner ex Boiss., Fl. Or., 2: 574 (1872);
- V. bithynica* (L.) L., Syst. Nat., ed. 10(2): 1166 (1759). Syn: *L. bithynicus* L., Sp. Pl. 2: 731 (1753); *Ar. vicioides* Medikus, Vorl. Churpf. Phys.-okon. Ges. 2: 360 (1787); *V. bithynica* Schrank, Baiersche Flora, 2: 262 (1789); *V. angulosa* Gaterau, Descr. Pl. Montaub. 129 (1789); *V. bithynica* Schrank, Baier. Fl., 2: 262 (1789); *V. minuta* Moench, Supp. Meth. Pl. Marburgi Cattorum, 50 (1802); *L. tumidus* Willd., Sp. Pl., 3(2): 1082 (1802); *V. bithynica* var. *grandifolia* Pers., Syn. Pl., 2: 273-657 (1807); *L. bithynicus* Lam., Dictionaire., 5(2): 706 (1823); *L. turgidus* Lam., Dictionaire. 5(2): 706 (1823); *L. bithynicus* var. *sessiliflorus* Ser. in DC., Prodr., 2: 374 (1825); *V. angustifolia* Hohen., Bull. Soc. Imp. Nat. Moscow, 6: 249 (1833); *V. bithynica* var. *latifolia* Syme, English Botany 3: 100 (1873); *V. bithynica* var. *angustifolia* Syme, English Botany, 3: 100 (1873); *L. barcinonensis* Pourret, Prodr. Fl. Hisp., 3: 229 (1877); *V. bithynica* var. *major* Arcang., Comp. Fl. Ital., 1: 205 (1882); *V. bifoliolata* Nyman, Cons. Flor. Eur., Supp., 2: 103 (1889); *V. bithynica* var. *genuina* Posp., Fl. Oesterr. Kustenl., 2: 414 (1897); *V. bithynica* var. *grandifolia* Posp., Fl. Oesterr. Kustenl., 2: 528 (1898); *V. bithynica* var. *sessiliflora* Beck in Reichb., Fl. Bosne., 1(1): 1-94 (1903).
- V. ciliatula* Lipsky, Trudy Tiflissk. Bot. Sada 4: 289 in nota (1899). Syn: *V. ciliata* Lipsky non Schur, Zap. Kievsk. Obsc. Estestvoisp. 11: 46 (1891); *V. ciliata* Lipsky non Schur, Acta Horti Petrop. 13: 293 (1894).
- V. cuspidata* Boiss., Diagn. Ser. 1(2): 104 (1843). Syn: *W. cuspidata* Alef., Bonplandia, 9: 69 (1861); *Em. cuspidatum* (Boiss.) Stankevich, Trudy Prikl. Bot. Genet. Selek., 72(1): 25 (1982).
- V. dionysiensis* Mout., Flore du Djebel Druze, 140 (1953).
- V. eristalioides* Maxted, Notes Edin. Bot. Gard., 45(3): 454 (1988).

- V. esdraelonensis* Warb. & Eig, Repert. Sp. Nov. Reg. Veg. 25: 352 (1928). Syn: *V. esdralonica* Warb. & Eig, Fedde Repert. Sp. Nov. Reg. Veg., 63(1): 113 (1931).
- V. faba* L., Sp. Pl. 2: 737 (1753). Syn: *F. vulgaris* Tragus, Strip., 617 (1552); *P. sativus* Dodoens, Hist. Pl., 472 (1578); *F. graeca* Matth., Opera. 326 (1598); *P. major* Dodoens Strip., Hist. Pempt., 513 (1616); *F. vulgaris* Moench, Meth. Pl. Hort. Bot. Marburgensis, 150 (1794); *V. esculenta* Salisb., Prodr. Strip. Chap. Allerton 1: 339 (1796); *F. vulgaris* Bernhardt, Syst. Verz. 1: 346 (1800); *F. sativa* Bernhardt, Syst. Verz. Erf., 1: 250 (1800); *F. viridis* Desf., Tabl. Bot. Mus. d'Hist. Nat., 1: 196 (1804); *O. faba* (L.) Brot., Fl. Lusitanica 2: 147 (1804); *Po. bifolius* Lapeyr., Hist. Abr. Pyr. Supp. 27. fide Benth. Cat. Pl. Pyr. (1818); *V. vulgaris* Gray, Nat. Arr. Brit. Pl., 2: 617 (1821); *V. faba* var. *humillima* Alef., Bonplandia 9: 348 (1861); *V. arcuata* Alef., Landw. Fl., 31 (1866); *F. vulgaris* var. *schlagintweiti* Alef., Fl. Landw. 30 (1866); *F. vulgaris* var. *celtica nana* Osw., Heer. Pfl. d. Pfahlb., 22 (1866); *F. vulgaris* var. *pliniana* Trabut, Bull. Soc. Bot. Fr., 57(5): 426 (1910); *F. vulgaris* var. *plinii* Kornicke ex Schweinf. Ges. f., Erkunde Berlin, 104 (1910); *F. cellica* var. *nana* Trabut, Bull. Soc. Bot. Fr. 57(5): 426 (1910); *F. schlagintweiti* Trabut, Bull. Soc. Bot. Fr., 58(1): 6 (1911); *V. faba* var. *schlagintweiti* (Alef.) Thell., La Flora Adventice de Montpellier, 344 (1912); *F. faba* (L.) House, New York State Mus. Bull., 254: 457 (1924); *V. pliniana* (Trabut) Murat., Bull. App. Bot. Gen. Pl. Breed., 50: 256 (1931).
- V. faba* subsp. *faba* var. *equina* Pers., Syn. pl (2): 273-657 (1807). Syn: *F. minor* var. *equina* Baub., Pinax (1623); *F. equina* Medikus, Vorles. Churpf. Ges. 2: 360 (1787); *V. equina* Steudel, Nomenclator Botanicus, 1: 881 (1821); *V. faba* var. *equina* Steudel, Nomencl. Bot., 1: 458 (1821); *V. equina* Reichenb., Fl. Germ. Excurs., 2: 532 (1832); *F. vulgaris* var. *equina* Alef., Bonplandia 9: 101 (1861).
- V. faba* subsp. *faba* var. *faba* L. Sp. Pl. 2: 737 (1753). Syn: *F. compressa* var. *major* Morison, Hist. Oxon. 2: 85 (1680); *F. major* Blackw., Herb. 1: 19 (1737); *F. major* J.A. Weinmann, Phyt. Ic. 2: 435 (1739); *F. major* Desf., Tabl. Bot. Mus. d'Hist. Nat., 1: 196 (1804); *F. vulgaris* var. *megalosperma* Alef., Bonplandia 9: 101 (1861); *V. faba* subsp. *faba* var. *major* Harz, Landw. Samenk., 2: 661 (1885); *V. faba* var. *major* Murat., Bull. Appl. Bot. Leningrad, Supp. 50, 73 (1931).
- V. faba* subsp. *faba* var. *minor* Beck, Fl. Nieder-Osterreich, 2: 889-894 (1892). Syn: *F. minor* Desf., Tabl. Bot. Mus. d'Hist. Nat., 1: 196 (1804); *F. minor* Roxb.,

- Fl. Ind., 3: 323 (1832); *F. vulgaris* var. *minuta* Alef., Bonplandia 9: 101 (1861); *F. vulgaris* var. *minor* Harz, Landw. Samenk., 2: 661 (1885).
- V. faba* subsp. *paucijuga* Murat., Bull. App. Bot. Leningrad, Supp. 50, 73 (1931). Syn: *F. vulgaris* var. *paucijuga* Alef., Fl. Landw., 31 (1866); *V. faba* var. *paucijuga* (Alef.) Asch. & Graebner, Fl. VI, 2: 988 (1909).
- V. galeata* Boiss., Diagn. ser. 1(2): 103 (1843). Syn: *V. galeata* var. *linearifolia* Zoh., Univ. of Jerusalem, Ann. Rep., A10-CR-11, 4 (1963).
- V. galilaea* Plitm. & Zoh. in Plitm., Isr. J. Bot., 14: 91 (1965). Syn: *V. narbonensis* var. *pilosa* Post, Fl. Syr. Pal. and Sin., 1: 288 (1896).
- V. galilaea* var. *faboidea* (Plitm. & D. Zoh. in Plitm.) H. Schäfer, Kulturpflanze 21: 265 (1973). Syn: *V. galilaea* subsp. *faboidea* Plitm. & Zoh. in Plitm., Isr. J. Bot., 14: 92 (1965); *V. narbonensis* subsp. *faboidea* (Plitm. & Zoh. in Plitm.) Ponert, Feddes Repert., 83: 634 (1973).
- V. galilaea* var. *galilaea* (Plitm. & D. Zoh. in Plitm.) H. Schäfer Kulturpflanze 21: 265 (1973). Syn: *V. galilaea* subsp. *galilaea* Plitm. & Zoh. in Plitm., Isr. J. Bot., 14: 92 (1965); *V. narbonensis* subsp. *galilaea* (Plitm. & Zoh. in Plitm.) Ponert, Feddes Repert., 83: 634 (1973).
- V. grandiflora* Scop., Flora Carnolica, 2: 65 (1772).
- V. grandiflora* var. *grandiflora* Scop., Fl. Carniol. ed. 2, 2: 65 (1772). Syn: *V. sordida* Willd., Sp. Pl., 3(2): 1108 (1802); *V. sordida* Waldst. & Kit., Desc. et Icon. Pl. Rar. Hungariae, 2: 133 (1805); *V. sordida* M. Bieb., Fl. Taur. Cauc., 2: 162 (1808); *V. lutea* Pallas ex M. Bieb., Flora Taur.-Cauc., 2: 162 (1808); *V. biebersteinii* Besser ex M. Bieb., Fl. Taur.-Cauc., 3: 472 (1819); *V. biebersteinii* Besser, En. Volhyn., 29 (1822); *V. grandiflora* var. *kitaibeliana* W. Koch, Syn., 1: 197 (1835); *V. grandiflora* var. *biebersteiniana* Koch, Syn. Fl. Germanicae et Helveticae, 3(1): 170 (1835); *V. grandiflora* var. *scopoliana* Koch, Syn. Fl. Germ. Helv., 3(1): 197 (1835); *V. grandiflora* var. *sordida* (Kit.) Griseb., Sp. Fl. Rumelicae et Bithynicae, 1: 77-78 (1843); *V. grandiflora* var. *villosa* Regel, Index Seminum Hort. Bot. Imp. Petropolitanus, 40 (1856); *C. grandiflora* var. *sordida* Alef., Bonplandia, 9: 101-102 (1861); *C. grandiflora* var. *rotundata* Alef., Bonplandia, 9: 101 (1861); *V. kitaibeliana* Schur, Enum. Pl. Transs., 168 (1866); *V. grandiflora* subsp. *sordida* (Waldst. & Kit.) Dorstal, Folia Mus. Rer. Nat. Bohem. Occid. Bot., 21: 8 (1884); *V. grandiflora* subsp. *biebersteinii* (Besser) Dorstal, Folia Mus. Rer. Nat. Bohem. Occid. Bot., 21: 8 (1884); *V.*

grandiflora var. *typica* Beck, Fl. Hieder-Osterreich, 2: 889-894 (1892); *V. grandiflora* var. *rotundata* (Ser.) Janchen, Neue Beitr. Balk., 3: 213 (1911).

V. grandiflora var. *incisa* Braun & Bouche, App. Spec. Nov. et Minus Cognitarum 22 (1853). Syn: *V. grandiflora* var. *dissecta* Boiss., Fl. Or. 2: 573 (1872); *V. serrata* Pant., Oestr. Bot. Zeitschr., 23(3): 80 (1873); *V. grandiflora* var. *serrata* (Pant.) Rohlena, Sitzb. Bohm. Ges. Wiss., 38: 43 (1905).

V. hyaeniscyamus Mout., Bul. Soc. Bot. Fr., 108: 314 (1961).

V. hybrida L., Sp. Pl. 2: 737 (1753). Syn: *Vs. hybrida* Moench, Meth. Pl. Hort. Bot. Marburgensis, 136 (1794); *V. spuria* Raf., Car. Nuo. Gen. Nuo. Sp. Ani. & Pl. Sicilia, 72 (1810); *H. hybrida* Alef., Bot. Zeitung 18(19): 166 (1860); *V. hybrida* var. *spuria* (Raf.) Strobl, Obz., 37: 288 (1887); *V. agerii* Bubani, Fl. Pyrenaea Ord. Nat. Grad. Digest., 2: 541 (1899); *V. linnaei* Rouy in Rouy & Fouc., Fl. Fr., 5: 220 (1899); *V. tollenda* E.H. Krause in Sturm, Fl. von Deutschland, 2(9): 31 (1901); *V. hybrida* var. *linearifolia* Popov, Fl. U.S.S.R., 13: 460 (1948).

V. hyrcanica Fischer & C. Meyer, Ind. Sem. Hort. Petr. 2: 28 (1835). Syn: *V. Biebersteinii* C. Meyer non Besser ex M. Bieb., Verz. Pfl. Caucas. 147 (1831); *H. hircania* Alef., Bot. Zeitung, 18(19): 166 (1860); *V. jaubertii* Boiss. & Buhse, Nou. Mem. Soc. Imp. Nat. Moscou 12: 71 (1860); *V. hyrcanica* var. *brachyodonta* Bornm., B. B. C., 19: 248 (1906); *V. brachyodonta* Bornm., B. B. C., 27: 346 (1910); *V. iberica* Grössh. in Grossh. & Schischkin, Plantae Orientales Exsiccatae, 30 (1924); *V. formosa* Schischkin, Trans. Tomsk. St. Univ., 81: 486 (1928).

V. johannis Tamamschjan in Karyagin, Fl. Azerbaidzhan, 5: 495 (1954). Syn: *V. narbonensis* Roth, Bot. Abh. Beobacht., 68 (1787); *V. narbonensis* var. *platycarpus* Alef., Bonplandia, 9: 100 (1861); *V. narbonensis* var. *lutea* Freyn & Sint., Osterr. Bot. Z. 44: 66 (1894).

V. johannis var. *ecirrhusa* (Popov) H. Schäfer, Kulturpflanze 21: 261 (1973). Syn: *V. narbonensis* var. *ecirrhusa* Popov in Sched., Ad. Herb. Fl. As. Med., 11: 270 (1927); *V. turkestanica* Vassilk., Fl. Usb. 3: 762 (1955).

V. johannis var. *johannis* Tamamschjan in Karyagin, Fl. Azerbaidzhan, 5: 495 (1954). Syn: *V. procumbens* var. *violacea* H. Schäfer, Sched. Herb (1973).

V. johannis var. *procumbens* H. Schäfer, Kulturpflanze 21: 261 (1973). Syn: *V.*

johannis var. *intermedia* Scheibe, Zuchter, 6: 234 (1934); *V. procumbens* H. Schäfer, Sched. Herb (1973).

V. kalakhensis Khattab, Maxted et Bisby Kew Bull. 43(3): 536 (1988).

V. lathyroides L., Sp. Pl., 2: 736 (1753). Syn: *Em. soloniense* L. in Torner, Cent. Pl. 2: 28 (1756); *V. minima* Gilib., Fl. Lithuan., 2: 106 (1782); *W. lathyroides* Gaertner, Meyer & Schreber, Fl. Wetterau, 3(1): 34 (1801); *W. minima* Alef., Bonplandia, 9: 69 (1861); *V. olbiensis* Reuter ex Timb.-Lagr., Bull. Soc. Bot. Fr., 13: 151 (1866); *V. arenivaga* Lamotte, Prod. Fl. Plat. Cent. Fr., 1: 214 (1877); *V. praecox* Jacquem. ex Arcang., Comp. Fl. It., 2: 525 (1894); *V. olbiensis* Reuter & Shuttlew. ex Rouy, Fl. France, 5: 216 (1899); *V. lathyroides* subsp. *olbiensis* (Reuter & Shuttlew.) Rouy in Rouy & Fouc., Flore France, 5: 216 (1900); *V. lathyroides* var. *olbiensis* Steudel ex Asch. & Graebner, Syn. Middleurop. Fl., 6(2): 960 (1909); *V. lathyroides* var. *typica* Asch. & Graebner, Syn. Middle. Fl., 6(2): 960 (1909); *V. guyoti* Beauverd, Bull. Soc. Bot. Geneve Ser. 2, 11: 133 (1919); *V. lathyroides* subsp. *olbiensis* (Reuter) Bujor., Bul. Grad. Bot. Univ. Cluj, 8: 119 (1929); *Em. lathyroides* (L.) Stankevich, Trudy Prikl. Bot. genet. Selek., 72(1): 25 (1982).

V. lutea L., Sp. Pl., 2: 736 (1753). Syn: *V. tridentata* Gaterau, Desc. Pl. Montauban, 129 (1789); *Vs. lutea* Moench, Meth. Pl. Hort. Bot. Marburgensis, 136 (1794); *V. hybrida* Hudson, Fl. Anglica, 3: 319 (1798); *W. lutea* Gaertner, Meyer & Scherber, Fl. der Wetterau, 3(1): 36 (1801); *V. hirta* Balbis ex Pers., Synopsis Plantarum 2: 308 (1806); *V. lutea* var. *pallidiflora* Ser. in DC., Prodr., 2: 363 (1825); *V. flavida* Schur, Sertum Florae Transsilvaniae, 4(8): 20 (1853); *V. ciliata* Schur, Sertum Florae Transsilvaniae, 4(8): 20 (1853); *H. lutea* Alef., Bot. Zeitung, 18(19): 166 (1860); *V. lerchenfeldiana* Schur, Enum. Pl. Transs., 168 (1866); *V. lentiformis* Schur, Enum. Pl. Transs., 168 (1866); *V. baetica* Schousboe ex Willk. & Lange, Prodr. Fl. Hisp., 3: 298 (1880); *V. cavanillesii* Martinez, Bol. Soc. Esp. Hist. Nat., 29: 410 (1929); *V. lutea* subsp. *cavanillesii* (Martinez) Romero, Lagasalia, 14: 141 (1986).

V. lutea subsp. *lutea* L., Sp. Pl., 2: 736 (1753). Syn: *V. laevigata* Smith, English Botany, 7: 483 (1798); *V. lutea* subsp. *lutea* var. *laevigata* (Smith) Boiss., Voy. bot. Esp., 194 (1838).

V. lutea subsp. *vestita* (Boiss.) Rouy, Fl. Fr. 5: 219 (1899). Syn: *V. hirta* Balbis ex DC., Syn. Pl. Fl. Gall. 360 (1806); *V. lutea* var. *hirta* (Balbis ex DC.) Loisel., Fl. Gall., 462 (1807); *V. lutea* var. *muricata* Ser. in DC., Prodr., 2: 263 (1825);

V. vestita Boiss., Elench. Pl. Nov., 39 (1838); *V. vestita* D. Clos, Hist. Chile Bot. Ser. 2: 134 (1847); *V. vestita* var. *tuberculata* Willd., no further details available (1877); *V. boetica* Schousboe ex Nyman, Consp. Fl. Europ., 1: 209 (1878); *V. lutea* subsp. *muricata* (Ser.) Guinea, Est. Bot. Vezas Esp. 57 (1953).

V. melanops Sibth. & Smith, Fl. Graec. Prodr., 2: 72 (1813). Syn: *V. bicolor* Willd., Enum. Pl. Hort. Berolinensis Supp., 51 (1813); *V. tricolor* Sebast. & Mauri, Florae Romanae Prodr., 245 (1818); *V. triflora* Reichenb., Fl. Germ. Excur., 2: 531 (1832); *V. melanops* Sibth. & Lindley, Fl. Graeca, 8: 701 (1833); *H. tricolor* Alef., Bot. Zeitung, 18(19): 166 (1860); *V. pichleri* Huter, Ostr. Bot. Zeitschrift, 55(2): 82 (1905); *V. melanops* var. *tricuspis* Bornm., Symb. Fl. Anat., 208 (1940).

V. melanops var. *melanops* Sibth. & Smith, Fl. Graec. Prodr., 2: 72 (1813).

V. melanops var. *loiseaui* Alleiz., Bull. Soc. Bot. Fr., 105:360 (1958).

V. michauxii Sprengel, Mant. Fl. Halens.: 48 (1807). Syn: *V. persepolitana* Boiss., Diagn. Ser. 1(6): 48 (1846); *T. michauxii* Alef., Bonplandia, 9: 102 (1861); *V. carnea* Kotschy in Unger & Braumuller, Die Insel Cypern, 386 (1865); *V. michauxii* var. *stenophylla* Boiss., Fl. Or., 2: 577 (1872); *V. aintabensis* (Boiss. & Hausskn. ex Boiss.) Blakelock, Kew Bull., 3: 424 (1948); *V. peregrina* subsp. *persepolitana* (Boiss.) Ponert, Feddes Repert., 83(9-10): 634 (1973); *V. peregrina* subsp. *michauxii* (Sprengel) Ponert, Feddes Repert., 83(9-10): 634 (1973).

V. mollis Boiss. & Hausskn. ex Boiss., Fl. Or. 2: 576 (1872). Syn: *V. benthamiana* Ali, Bot. Notiser., 120: 51 (1967); *V. camptopoda* Townsend, Kew Bull., 21: 452 (1967); *V. sericocarpa* subsp. *mardinica* Ponert, Feddes Repert., 83: 634 (1973); *V. sericocarpa* subsp. *mollis* (Boiss. & Hausskn.) Ponert, Feddes Repert., 83: 634 (1973); *V. sericocarpa* subsp. *urfae* Ponert, Feddes Repert., 83: 634 (1973).

V. narbonensis L., Sp. Pl. 2: 737 (1753). Syn: *F. equina* Miller, Gard. Dict. Abr., 4 (1755); *F. bona* Medikus, Vorles. Churpf. Ges. 2: 360 (1787); *V. platycarpus* Roth, Bot. Abh. Beobacht., 10 (1787); *B. speciosa* Medikus, Vorles. Churpf. Ges., 2: 361 (1787); *B. narbonensis* Medikus, Vorles. Churpf. Ges. 2: 360 (1787); *V. latifolia* Moench, Meth. Pl. Hort. Bot. Marburgensis, 149 (1794); *V. monodelpha* Roth, Catalecta Bot. 2: 97 (1800); *V. platycarpus* Willd., Sp. Pl., 3(2): 1110 (1802); *V. narbonensis* var. *hortensis* Lam., Fl. France, 4(2): 597 (1815); *V. narbonensis* var. *integrifolia* Ser. in DC., Prodr., 2: 365 (1825); *V.*

heterophylla Reichenb., Fl. Germ. Excurs., 2: 531 (1832); *V. narbonensis* var. *integrifolia* Koch, Syn. Fl. Germ. Helv., 2: 215 (1843); *V. narbonensis* var. *heterophylla* (Reich.) Koch, Synop. Fl. Ger., 2: 215 (1843); *V. narbonensis* var. *genuina* Gren. & Godron Fl. France, 1(2): 463 (1848); *V. narbonensis* var. *platycarpus* Alef., Bonplandia, 9: 100 (1861); *V. narbonensis* var. *culta* Alef., Bonplandia 9: 100 (1861); *V. narbonensis* Schur, Verh. Des Naturf. Vereines In Brunn 15(2): 192 (1877); *V. narbonensis* var. *heterophylla* Rouy in Rouy & Fouc., Fl. Fr., 5: 221 (1899); *V. narbonensis* var. *typica* Fiori & Paol., Fl. Italia, 2(1): 109 (1900); *V. serratifolia* var. *integrifolia* Beck in Reichb., Fl. Bosne., 1(1): 1-94 (1903).

V. narbonensis var. *aegyptiaca* Kornhuber ex Asch. & Schweinf., Mem. Inst. Egypt 2: 756 (1889).

V. narbonensis var. *affinis* Kornhuber ex Asch. & Schweinf., Mem. Inst. Egypt, 2: 756 (1889). Syn: *V. narbonensis* var. *intermedia* Strobl, Flora der Nebroden, 482 (1887).

V. narbonensis var. *jordanica* H. Schäfer, Kulturpflanze 21: 251 (1973).

V. narbonensis var. *narbonensis* L., Sp. Pl., 2: 737 (1753).

V. narbonensis var. *salmonea* (Mout.) H. Schäfer, Kulturpflanze XXI 253-254 (1973). Syn: *V. serratifolia* subsp. *salmonea* Mout., Nouv. Fl. Liban et Syrie, 2: 407 (1970); *V. narbonensis* var. *crenate* H. Schäfer, Kulturpflanze, 19: 211 (1973).

V. noeana Reuter ex Boiss., Fl. Or. 2: 572 (1872).

V. noeana subsp. *noeana* Reuter ex Boiss., Fl. Or., 2: 572-573 (1872). Syn: *V. hyrcanica* subsp. *noeana* (Reuter ex Boiss.) Ponert, Feddes Repert., 83(9-10): 633 (1973).

V. noeana subsp. *megalodonta* Rech. f., Zur. Fl. Syr. Lib., Ark. Bot. 5(1):262 (1959). Syn: *V. hyrcanica* subsp. *megalodonta* (Rech. f.) Ponert, Feddes Repert., 83(9-10): 633 (1973).

V. oroboides Wulfen in Jacq., Coll. Bot. Chem. Hist. Nat. Sp. 4: 323 (1790). Syn: *O. lathyroides* L., Sp. Pl. 1027 (1753); *O. rupensis* Lerchenf., Herb. Transs. Jun (1785); *V. oroboides* Willd., Sp. Pl., 3(2): 1103 (1802); *O. vicioides* Ser. in DC., Prodr., 2: 377 (1825); *O. clusii* Sprengel, Linnaei Syst. Veget.,

16(3): 259 (1826); *A. clusii* Alef., Bonplandia, 9: 101 (1861); *O. rupensis* Lerchenf. ex Schur, Enum. Pl. Transs. 167 (1866).

V. pannonica Crantz, Strip. Austr. 2(5): 393 (1769). Syn: *V. sylvestris* Tournefort, Flore du Suaverubente (1705); *V. nissoliana* L., Sp. Pl. 2: 735 (1753); *V. lutea* Kramer, Elenchus, 216 (1756); *V. nissoliana* Gouan, Herbor. Envir. Montpellier 51 (1796); *V. hybrida* Georgi, Besch. des Russis. Reichs, 3(5): 1169 (1800); *V. pannonica* Willd., Sp. Pl., 3(2): 1107 (1802); *V. lineata* M. Bieb., Fl. Taurico-Caucasica, 3: 473 (1819).

V. pannonica subsp. *pannonica* Crantz, Strip. Austr. 2 (5):393-394 (1769). Syn: *Vs. uninata* Moench, Meth. Pl. Hort. Bot. Marburgensis, 136 (1794); *Vs. hirsuta* Moench, Meth. Pl. Hort. Bot. Marburgensis, 137 (1794); *V. uncinata* Reichenb., Fl. Germ. Excur., 2: 530 (1832); *H. pannonica* Alef., Bot. Zeitung, 18(19): 166 (1860); *V. pannonica* subsp. *eupannonica* Hayek, Prodr. Fl. Penins. Balc., 802 (1926).

V. pannonica subsp. *striata* (M. Bieb.) Nyman, Consp. Fl. Europaea, 209 (1878). Syn: *Vs. striata* Moench, Meth. Pl. Hort. Bot. Marburgensis, 137 (1794); *V. striata* M. Bieb., Fl. Taur.-cauc. 2: 162 (1808); *V. purpurascens* Ser. in DC., Cat. Hort. Monsp. 155 (1813); *V. pannonica* var. *purpurascens* (DC.) Ser., Prodr. 2: 364 (1825); *V. pannonica* var. *striata* (M. Bieb.) Griseb., Spic. Fl. Rum. Bith 1:79 (1843); *H. purpurescens* Alef., Bot. Zeitung, 18(19): 166 (1860) *V. pannonica* subsp. *purpurascens* (DC.) Arcang., Comp. Fl. Ital., 119 (1882); *V. pannonica* subsp. *striata* (M. Bieb.) Hayek, Prodr. Fl. Penins. Balc., 802 (1926).

V. peregrina L., Sp. Pl., 2 : 737 (1753). Syn: *V. megalosperma* M. Bieb., Fl. Taur. Cauc. 2: 161 (1808); *V. leptophylla* Raf., Car. Nuo. Gen. Nuo. Sp. Ani. Pl. Sicilia, 71 (1810); *V. monanthos* Viv., Fl. Lib. Spec., 42 (1824); *V. peregrina* var. *pallida* Boiss., Diag. Pl. Or. Nov. Ser. 2 (1859); *V. peregrina* var. *glabrescens* Post, Fl. Syr. Pal. and Sin., 1: 288 (1896); *V. peregrina* var. *parviflora* Post, Fl. Syr. Pal. and Sin., 1: 288 (1896); *V. peregrina* var. *angustifolia* Rouy in Rouy & Fouc., Fl. Fr., 5: 218 (1899); *V. peregrina* var. *latifolia* Rouy in Rouy & Fouc., Fl. Fr., 5: 218 (1899); *V. peregrina* var. *leptophylla* (Raf.) Hal., Consp. Fl. Graec., 1: 481 (1901); *V. peregrina* var. *gracilior* Popov in Sched., Ad. Herb. Fl. As. Med., 11: 271 (1927); *V. gracilior* (Popov in Sched.) Popov, Fl. U.S.S.R. 13: 467 (1948); *V. peregrina* var. *carnea* (Kotschy) Plitn., Bio. Ann. Vicia, U.S.D.A., Rep. 10-CR-11, 75 (1968); *V. peregrina* subsp. *megalosperma* (M. Bieb.) Ponert, Feddes Repert., 83(9-10): 634 (1973).

- V. pyrenaica* Pourret, Act. Toulouse Mem. 3: 333 (1788). Syn: *V. talpa* Raym. ex Poiret, Encyc. Meth. Bot. 8: 563 (1808); *V. fagonii* Lapeyr., Hist. Abr. Pl. Pyr. 2, 419 (1813).
- V. qatmensis* Gomb., Notulae systematicae, 14(2): 109 (1951).
- V. sativa* L., Sp. Pl. 2: 736 (1753). Syn: *F. angustifolia* Miller, Gard. Dict. Abr., 4 (1755); *V. lathyroides* All., Fl. Pedemontana, 1: 326 (1785); *V. alba* Medikus, Vorles. Churpf. Gen. 2: 359 (1787); *V. alba* Moench, Meth. Pl. Hort. Bot. Marburgensis, 148 (1794); *V. bacla* Moench, Methn. 148 (1794); *V. luganensis* Schleicher, Cat. Omni. Pl. Helv., 4: 31 (1815); *V. nemoralis* Steudel, Nomen. Bot., Ed. 1. 882 (1821); *V. sativa* var. *leucosperma* Ser. in DC., Prodr., 2: 361 (1825); *V. obovata* Ser. in DC., Prodr. 2: 361 (1825); *V. helvetica* Ser. in DC., Prodr. 2: 361 (1825); *V. cosentinii* Guss., Fl. Siculae Prodr., 2: 426 (1828); *V. pygmaea* Link, Hand. zur Erkennung, 2: 191 (1829); *V. obocordata* Reichenb., Fl. Germ. Excurs., 2: 530 (1832); *V. vulgaris* Uspensky, Bull. Soc. Nat. Mosc., 7: 378 (1834); *V. remrevillensis* Hussenot, Prodr. de la Lorraine, 2(1): 196 (1835); *V. pallida* Turcz., Bull. Soc. Imp. Nat. Moscow, 15(4): 789 (1842); *V. mowsiana* Jordan, Fl. Cent. Fr., 3(2): 172 (1857); *V. sativa* var. *variifolia* Neilr., Fl. Nieder-Oesterr. 962 (1859); *O. japonicus* Alef., Bonplandia 9: 143 (1861); *V. stenophylla* Schur, Enum. Pl. Transs., 169 (1866); *V. longifolia* Schur, Enum. Pl. Transs., 169 (1866); *V. campestris* Schur, Enum. Pl. Transs., 169 (1866); *V. excisa* Schur, Enum. Pl. Transs., 169 (1866); *V. consobrina* Pomel, Bull. Soc. Sci. Phys. Algerie, 11: 192 (1874); *V. maculata* Pomel, Nou. Mat. Fl. Atlan., 192 (1874); *V. pallida* Jacquem. ex Baker in Hook., Fl. Brit. Ind., 2: 178 (1876); *V. diomedis* Gren. ex Nyman, Consp. Fl. Europ., 1: 210 (1878); *V. martini* Gren. ex Nyman, Consp. Fl. Eur., 1: 210 (1878); *V. communis* Rouy in Rouy & Fouc., Fl. Fr., 5: 208 (1899); *V. leganiana* Rapaics & Lengn., Mag. Bot. Lapok., 18: 55 (1919); *V. terana* Losa, Anales Inst. Bot. Cavanilles, 9: 493 (1950); *V. sativa* subsp. *terana* (Losa) Benedi & Molero, Bol. Soc. Brot. ser., 2, 59: 64 (1986); *V. sativa* subsp. *consobrina* (Pomel) Greuter & Burdet, Willdenowia, 19: 34 (1989).
- V. sativa* subsp. *amphicarpa* (L.) Batt. in Batt. & Trabut, Fl. Algerie, 1: 268 (1889). Syn: *V. amphicarpa* L., Sp. Pl. ed. 2: 1030 (1763); *V. amphicarpa* Lam., Encycl., 2: 711 (1788); *V. amphicarpa* Dorthes, Obs. Phy. Hist. Nat. Arts 35: 131 (1789); *V. subterranea* Ger. ex Dorthes, Obs. phys. hist. nat., 35: 131 (1789); *V. angustifolia* var. *amphicarpa* (Dorthes) Alef., Bot. Zeitung, 20: 362 (1872); *V. sativa* subsp. *amphicarpa* var. *pseudosativa* Rouy in Rouy & Fouc., Fl. Fr., 5: 214 (1899); *V. sativa* subsp. *amphicarpa* var. *pseudoangustifolia* Rouy

in Rouy & Fouc., Fl. Fr., 5: 214 (1899); *V. sativa* subsp. *amphicarpa* (Dorthes) Asch. & Graebner, Syn. Mitteleurop. Fl. 6(2): 974 (1909).

V. sativa subsp. *devia* J.G. de Costa, Boletim do Museu Municipal do Funchal, III(7): 62 (1948).

V. sativa subsp. *incisa* (M. Bieb.) Arcang., Comp. Fl. Italiana, 201 (1882). Syn: *V. incisa* M. Bieb., Fl. Taur-cauc., 3: 471 (1819); *V. pimpinelloides* Mauri, Fl. Rom. Cent., 13: 35 (1820); *V. sativa* subsp. *cordata* var. *incisa* (M. Bieb.) Boiss., Fl. Or., 2: 574 (1872); *V. sativa* subsp. *cordata* var. *incisa* (Wulfen ex Hoppe) Asch. & Graebner, Mitteleurop. Fl. 6(2): 968 (1909); *V. incisiformis* Stefanov, Izv. Bot. Inst. Otd. Biol. Nauk., 16: 226 (1966).

V. sativa subsp. *macrocarpa* (Moris) Arcang., Comp. Fl. Italiana, 201 (1882). Syn: *V. sativa* var. *macrocarpa* Moris, Stirp. Sard. Elench. 1: 17 (1827); *V. angustifolia* var. *macrocarpa* Moris, Wtirpium Sardoarum Elenchus, 17 (1829); *V. macrocarpa* Bertol., Fl. It. 7: 511 (1850); *V. morisiana* Jordan ex Boreau, Fl. Centr. Fr., Ed. 3(1): 172 (1857); *V. sativa* subsp. *macrocarpa* (Bert.) Kiffm., Z. Acker-Pflzbau, 94: 453 (1952).

V. sativa subsp. *nigra* (L.) Ehrh., Hannover. Mag. 15: 229 (1780). Syn: *V. angustifolia* Grufb., Fl. Angl., 21 (1754); *V. angustifolia* L., Amoen. Acad., 4: 105 (1759); *V. sativa* var. *nigra* L., Sp. Pl., ed. 2: 1037 (1763); *V. angustifolia* Roth, Tent. Fl. Germ. 1: 310 (1788); *F. angustifolia* Bernhardi, Sys. Cer. Pfl. Gegend um Erfurt, 1: 250 (1800); *V. segetalis* Thuill., Fl. Env. Paris, 2: 367 (1800); *V. sativa* var. *angustifolia* Roth, Cat. Bot., 2: 96 (1800); *V. canadensis* Zuccagni, Roem. Collect. 151 (1806); *V. pilosa* M. Bieb., Fl. Taur. Cauc., 2: 161 (1808); *V. cordata* Hoppe, Fl. Deutschlands, 8: 31 (1811); *V. cordata* Wulfen ex Hoppe, Fl. Dtschld., 32: 497 (1812); *V. sativa* var. *angustifolia* (Grufb.) Wahlb., Fl. Carp., 218 (1814); *V. nigra* var. *angustifolia* Steudel, Nomencl. Bot., 1: 882 (1821); *V. heterophylla* C. Presl in J. Presl & C. Presl, Del. Prague. Hist. Nat. Spect., 1: 37 (1822); *V. intermedia* Viv., Fl. Lib. Spec., 42 (1824); *V. sativa* subsp. *nigra* var. *segetalis* (Thuill.) Ser. ex DC., Prodr. 2: 361 (1825); *V. maculata* C. Presl, Fl. Sicula, 1: 23 (1826); *V. cordifolia* Wulfen in Sprengel, Syst., 3: 264 (1826); *V. cuneata* Guss., Fl. Sic. Prod., 2: 428 (1828); *V. sativa* subsp. *angustifolia* (L.) Gaudin, Fl. Helv., 4: 510 (1829); *V. angustifolia* subsp. *segetalis* (Thuill.) Gaud., Fl. Helv., 4: 510 (1829); *V. acerosa* var. *angustifolia* Reichenb., Fl. Germ. Excurs., 2: 530 (1832); *V. bobartii* E. Forster, Trans. Linn. Soc. 16: 442 (1833); *V. nemoralis* Ten., Fl. Nap., 5: 118 (1835); *V. angustifolia* var. *segetalis* Koch, Syn. Fl. Germ. & Helv., 3(1): 197 (1835); *V. melanocarpa* Hussenot, Prodr. Cat. Pl. Lorraine, 1: 105 (1835); *V.*

conspicua Lowe, Trans. Camb. Phil. Soc., 6(3): 544 (1838); *V. multicaulis* Wallr., Linnaea 14: 625 (1840); *V. polymorpha* Godron, Fl. Lorraine, 1: 179 (1843); *V. angustifolia* D. Clos, Fl. Chilina, 2: 135 (1847); *V. cuneata* Gren. & Godron, Fl. Fr., 1(2): 459 (1848); *V. uncinata* Boreau, Fl. Centre France ed. 3, 2: 173 (1857); *V. forsteri* Jordan ex Boreau, Fl. Cent. Fr., 3(1): 172 (1857); *V. angustifolia* (L.) Alef., Bonplandia, 9: 71 (1860); *V. scepusiensis* Kit., Linnaea, 32: 629 (1863); *V. lanciformis* Lange in Kjoeb., Vidensk. Meddle. Dansk Naturhist. ser. 2,7: 183 (1865); *V. sativa* subsp. *cordata* var. *linearis* Lange, Vidensk. Meddel. Kjob. Aud. Aart., 7: 379 (1865); *V. ciliata* Schur, Enum. Pl. Transs., 168 (1866); *V. sallei* Timb.-Lagr., Bull. Soc. Bot. Fr., 13: 149 (1866); *V. angustifolia* var. *cordata* (Wulfen) Boiss., Fl. Or., 2: 575 (1872); *V. consobrina* Pomel, Nou. Mat. Fl. Atlan., 192 (1874); *V. sativa* subsp. *segetalis* (Thuill.) Celak., Prodr. Fl. Bohmen, 680 (1875); *V. timbali* Lorot in Lorot & Barr, Fl. Montpellier, 2: 804 (1876); *V. uncinata* Desf. ex Nyman, Consp., 210 (1878); *V. closiana* F. Philippi, Cata. Pl. Vasc. Chilensium, 62 (1881); *V. imparipinnata* Potonie, Sepa. Monatsschrift Vereins Carte Nbaues, 9 (1881); *V. sativa* subsp. *cordata* var. *gigantea* Freyn, Verh. ZBG., 31: 364 (1881); *V. debilis* Perez Lara, Anal. Soc. Esp. Hist. Nat. 11: 402 (1882); *V. sativa* subsp. *incisa* var. *cordata* (Wulfen ex Hoppe) Arcang., Comp. Fl. Ital., 1: 205 (1882); *V. sativa* subsp. *segetalis* (Thuill.) Dorstal, Folia Mus. rere. Nat. Bohem. Occid. Bot., 21: 8 (1884); *V. sativa* subsp. *angustifolia* (L.) Batt. in Batt. & Trabut, Fl. Algerie, 1: 268 (1889); *V. angustifolia* subsp. *segetalis* (Thuill.) Corb., Nouv. Fl. Normandie, 183 (1894); *V. sativa* var. *cordata* (Wulfen) Arcang., Comp. Fl. It., 2: 524 (1894); *E. bobartii* (E. Forster) Burnat, Fl. Alpes 2: 172 (1896); *V. heterophylla* Philippi, Ann. Univ. Chile 84: 268 (1898); *V. sativa* subsp. *angustifolia* (L.) Asch. & Graebner, Fl. Norddeutsch. Flachl. 451 (1898); *V. angustifolia* var. *uncinata* Reichard in Rouy, Fl. Fr., 5: 212 (1899); *V. sativa* subsp. *angustifolia* var. *albiflora* (Lindb.) Asch. & Graebner, Syn. Mitteleurop. Fl., 6(2): 972 (1909); *V. sativa* subsp. *cordata* (Wulfen ex Hoppe) Asch. & Graebner, Syn. Mitteleurop. Fl. 6(2): 698 (1909); *V. sativa* subsp. *cordata* var. *albiflora* (Freyn) Asch. & Graebner, Syn. Mitteleurop. Fl., 6(2): 969 (1909); *V. sativa* subsp. *cordata* var. *pulchella* (Posp.) Asch., Syn. Middle Fl., 6(2): 974 (1909); *V. sativa* subsp. *cordata* var. *flavida* (Schur) Asch., Syn. Middle Fl., 6(2): 972 (1909); *V. sativa* subsp. *angustifolia* (Grufb.) Asch. & Graebner, Syn. Mitteleurop. Fl., 6(2): 971 (1909); *V. basilei* Sennen & Mauricio in Sennen, Diagn. Pl. Espagne Maroc, 246 (1936); *V. sativa* subsp. *cuneata* (Guss.) Maire in Emberger & Maire, Cat. Pl. Maroc, 1053 (1941); *V. angustifolia* subsp. *cordata* (Wulfen) Janchen Catal. Fl. Austr., 2: 575 (1957); *V. angustifolia* subsp. *segetalis* (Thuill.) Mettin & Hanelt, Kulturpflanze, 12: 214 (1964); *V. sativa* subsp. *linearifolia* Stankevich, Byull. Vses. Ord. Lenina Inst. Rast. Vavilov 81: 6 (1978); *V. sativa* subsp. *heterophylla* (C. Presl) J.

Duvign, Soc. Echange Pl. Vasc. Eur. Occid. Med. 17, Sup:21 (1979); *V. sativa* subsp. *pilosa* (M. Bieb.) Plitm. & Zoh., Pl. Syst. Evol., 131(1-2): 146 (1979).

V. sativa subsp. *sativa* L., Sp. Pl. 2: 736 (1753). Syn: *V. notata* Gilib., Fl. Litan., 2: 105 (1782); *V. globosa* Retz., Fasc. Obs. Bot. Tert., 3: 39 (1783); *V. leucosperma* Moench, Meth. Pl. Hort. Bot. Marburgensis, 148 (1794); *V. nodosa* Gaertner, Fructibus Seminibus Plantarum, 2: 151 (1802); *V. glabra* Schleicher, Cat. Omni. Pl. Helv., 4: 37 (1821); *V. sativa* var. *obovata* (Ser.) Gaudin, Fl. Helv. 4: 510 (1829); *V. nemoralis* (Pers.) Boreau, Fl. Cent. Fr., 3(1): 172 (1857); *V. torulosa* Jordan ex Boreau, Fl. Centr. Fr., 3(2): 173 (1857); *V. sativa* subsp. *sativa* var. *obcordata* Neilr., Fl. Nieder-Oesterr. 962 (1859); *V. sativa* var. *umbriflora* Alef., Bot. Zeit., 9: 78 (1860); *V. abyssinica* Alef., Bonplandia, 9: 72 (1861); *V. sativa* var. *imparipinnata* Potonie, Fl. Beobachtungen Priegnitz, 24: 165 (1883); *V. sativa* subsp. *sativa* var. *alba* (Moench) Beck in Reichb., Ic., 22: 181 (1903); *V. sativa* subsp. *notata* Asch. & Graebner, Mitteleurop. Fl. 6(2): 963 (1909); *V. sativa* subsp. *sativa* var. *carnea* (Beck) Asch. & Graebner, Syn. Mitteleurop. Fl., 6(2): 964 (1909); *V. sativa* subsp. *sativa* var. *cordifolia* Asch. & Graebner, Syn. Mitteleurop. Fl., 6(2): 964 (1909); *V. sativa* subsp. *notata* Asch. & Graebner, Syn. Mitteleurop. Fl., 6(2): 963 (1909); *V. sativa* subsp. *obovata* (Ser.) Schinz & Thell. in Schinz & R. Keller, Fl. Schweiz ed. 3, 2: 234 (1914).

V. sepium L., Sp. Pl., 2: 737 (1753). Syn: *F. sepium* Miller Gard. Dict. Abr., 4 (1755); *V. rotundifolia* Gilib., Fl. Litan. 2: 106 (1782); *Vs. sepium* Moench, Meth. Pl. Hort. Bot. Marburgensis, 136 (1794); *V. sordida* Salisb., Prodr. Strip. Chapel Allerton, 1: 339 (1796); *V. dumetorum* Thuill., Fl. Env. Paris. 2(7): 366 (1799); *F. sepium* Bernhardt, Syst. Verz. Ref. 1: 250 (1800); *W. sepium* Gaertner, Meyer & Schreber, Fl. Wett., 3(1): 34 (1801); *V. anomala* Boern., Prodr. Fl. Mon. Westphalorum, 218 (1824); *V. pratensis* var. *ochroleuca* Wallr., Fl. Hercynica, 256 (1840); *V. pratensis* Wallr., Linnaea, 14: 626 (1840); *A. sepium* Alef., Bonplandia, 9: 100 (1861); *V. oxyphylla* Schur, Enum. Pl. Transs., 167 (1866); *V. drymeja* Schur, Enum. Pl. Transs., 167 (1866); *V. subrotunda* Schur, Enum. Pl. Transs., 167 (1866); *V. tricolor* Schur, Enum. Pl. Transs., 167 (1866); *V. separia* Dulac, Fl. Hautes-Pyr., 287 (1867).

V. sepium var. *ericalyx* Celak., Prodr. Fl. Bohmen 4: 910 (1881).

V. sepium var. *montana* Koch, D.G.D.J., Syn. Fl. Germ. Helv., 1: 196 (1835). Syn: *V. montana* Froelich ex Koch, Syn. Fl. Germ. Helv., 2: 215 (1835); *V. sepium* var. *angustifolia* Koch, Syn. Fl. Germ. Helv., 2: 215 (1843); *V. sepium*

- subsp. *montana* (Koch, D.G.D.J.) Hamet-Ahti, Ann. Bot. Fennici 7: 173 (1970).
- V. sepium* var. *sepium* L., Sp. Pl. 2: 737 (1753). Syn: *V. sepium* var. *vulgaris* Gaudin, Fl. Helv., 4: 510 (1829); *V. sepium* var. *vulgaris* Koch, Syn. Fl. Germ. Helv., 1: 196 (1835); *V. sepium* var. *ovata* Schur, Enum. Pl. Transs., 167 (1866).
- V. sericocarpa* Fenzl, Pug. Pl. Sy. Tauri Occid., 4 (1842). Syn: *H. sericocarpa* Alef., Bot. Zeit., 18(19): 166 (1860); *V. sericocarpa* var. *microphylla* Boiss., Fl. Or. 2: 571 (1872); *V. podocarpa* Boiss. & Hausskn. ex Boiss., Fl. Or., 2: 571 (1872); *V. sericocarpa* subsp. *ardinica* Ponert, Feddes repert., 83(9-10): 634 (1973).
- V. serratifolia* Jacq., Fl. Austr. 5: 30 (1778). Syn: *F. serratifolia* Miller, Gard. Dict. Abr., 4 (1755); *V. monadelpha* Roth, Catalecta Botanica, 2: 97 (1800); *V. serratifolia* Willd., Sp. Pl., 3(2): 1111 (1802); *V. narbonensis* var. *serratifolia* (Jacq.) Ser. in DC., Prodr. 2: 365 (1825); *V. narbonensis* var. *serratifolia* Koch, Syn. Fl. Ger. Helv. 3(1): 215 (1857); *F. serratifolia* Fuss, Fl. Transsilv. 179 (1866); *V. narbonensis* subsp. *serratifolia* (Jacq.) Nyman, Consp. Fl. Eur. 1:240 (1878); *V. narbonensis* subsp. *serratifolia* (Jacq.) Arcang., Comp. Fl. Ital., 119 (1882); *V. narbonensis* subsp. *serratifolia* (Jacq.) Asch. & Graebner, Mitteleurop. Fl. 6(2):986 (1909); *V. narbonensis* var. *serratifolia* (Jacq.) Hermann, USDA Agric. Handbook, 168: 31 (1960); *B. serratifolia* (Jacq.) Stankevich, Trudy Prikl. Bot. Genet. Selekt., 72(1): 27 (1982).
- V. tigridis* Mout., Nouv. Fl. Liban et Syrie, 2: 402 (1969).

APPENDIX II b***Vicia* subgenus *Vicia* synonymized checklist: alphabetical listing.**

- Arachus vicioides* Medikus = *V. bithynica* (L.) L.
Atossa clusii Alef. = *V. oroboides* Wulfen in Jacq.
A. sepium Alef. = *V. sepium* L.
Bona narbonensis Medikus = *V. narbonensis* L.
B. serratifolia (Jacq.) Stankevich = *V. serratifolia* Jacq.
B. speciosa Medikus = *V. narbonensis* L.
Cujunie grandiflora var. *rotundata* Alef. = *V. grandiflora* Scop. var. *grandiflora*
C. grandiflora var. *sordida* Alef. = *V. grandiflora* Scop. var. *grandiflora*
Ervum cuspidatum (Boiss.) Stankevich = *V. cuspidata* Boiss.
E. lathyroides (L.) Stankevich = *V. lathyroides* L.
E. soloniense L. in Torner = *V. lathyroides* L.
Ervilia bobartii (E. Forster) Burnat = *V. sativa* subsp. *nigra* (L.) Ehrh.
Faba angustifolia Miller = *V. sativa* L.
F. angustifolia Bernhardt = *V. sativa* subsp. *nigra* (L.) Ehrh.
F. bona Medikus = *V. narbonensis* L.
F. cellica var. *nana* Trabut = *V. faba* L.
F. compressa var. *major* Morison = *V. faba* L. subsp. *faba* var. *faba*
F. equina Medikus = *V. faba* L.
F. equina Miller = *V. narbonensis* L.
F. faba (L.) House = *V. faba* L.
F. graeca Matth. = *V. faba* L.
F. major Blackw. = *V. faba* L. subsp. *faba* var. *faba*
F. major J.A. Weinmann = *V. faba* L. subsp. *faba* var. *faba*
F. major Desf. = *V. faba* L. subsp. *faba* var. *faba*
F. minor Desf. = *V. faba* subsp. *faba* var. *minor* Beck
F. minor Roxb. = *V. faba* subsp. *faba* var. *minor* Beck
F. minor var. *equina* Baub. = *V. faba* subsp. *faba* var. *minor* Beck
F. narbonensis Schur = *V. narbonensis* L.
F. sativa Bernhardt = *V. faba* L.
F. schlagintweitii Trabut = *V. faba* L.
F. sepium Bernhardt = *V. sepium* L.
F. sepium Miller = *V. sepium* L.
F. serratifolia Fuss = *V. serratifolia* Jacq.
F. serratifolia Miller = *V. serratifolia* Jacq.
F. viridis Desf. = *V. faba* L.
F. vulgaris Bernhardt = *V. faba* L.

- F. vulgaris* Moench = *V. faba* L.
F. vulgaris Tragus = *V. faba* L.
F. vulgaris var. *celtica nana* Osw. Heer. = *V. faba* L.
F. vulgaris var. *equina* Alef. = *V. faba* L.
F. vulgaris var. *megalosperma* Alef. = *V. faba* L.
F. vulgaris var. *minor* Harz = *V. faba* subsp. *faba* var. *minor* Beck
F. vulgaris var. *minuta* Alef. = *V. faba* subsp. *faba* var. *minor* Beck
F. vulgaris var. *paucijuga* Alef. = *V. faba* subsp. *paucijuga* Murat.
F. vulgaris var. *pliniana* Trabut = *V. faba* L.
F. vulgaris var. *plinii* Kornicke ex Schweinf. = *V. faba* L.
F. vulgaris var. *schlagintweiti* Alef. = *V. faba* L.
Hypechusa hircania Alef. = *V. hyrcanica* Fischer & C. Meyer
H. hybrida Alef. = *V. hybrida* L.
H. lutea Alef. = *V. lutea* L.
H. pannonica Alef. = *V. pannonica* Crantz subsp. *pannonica*
H. purpurescens Alef. = *V. pannonica* subsp. *striata* (M. Bieb.) Nyman
H. sericocarpa Alef. = *V. sericocarpa* Fenzl
H. tricolor Alef. = *V. melanops* Sibth. & Smith
Lathyrus barcinonensis Pourret = *V. bithynica* (L.) L.
L. bithynicus L. = *V. bithynica* (L.) L.
L. bithynicus Lam. = *V. bithynica* (L.) L.
L. bithynicus var. *sessiliflorus* Ser. in DC. = *V. bithynica* (L.) L.
L. tumidus Willd. = *V. bithynica* (L.) L.
L. turgidus Lam. = *V. bithynica* (L.) L.
Orobus anomalus Koch = *V. abbreviata* Fischer ex Sprengel
O. caucasicus Sprengel = *V. abbreviata* Fischer ex Sprengel
O. clusii Sprengel = *V. oroboides* Wulfen in Jacq.
O. faba (L.) Brot. = *V. faba* L.
O. japonicus Alef. = *V. sativa* L.
O. lathyroides L. = *V. oroboides* Wulfen in Jacq.
O. rupensis Lerchenf. = *V. oroboides* Wulfen in Jacq.
O. rupensis Lerchenf. ex Schur = *V. oroboides* Wulfen in Jacq.
O. vicioides Ser. in DC. = *V. oroboides* Wulfen in Jacq.
Pisum major Dodoens = *V. faba* L.
P. sativus Dodoens = *V. faba* L.
Potamogeton bifolius Lapeyr. = *V. faba* L.
Tuamina michauxii Alef. = *V. michauxii* Sprengel
V. abbreviata Fischer ex Sprengel
V. abbreviata subsp. *balansae* (Boiss.) Stankevich = *V. balansae* Boiss.
V. abyssinica Alef. = *V. sativa* L. subsp. *sativa*
V. acerosa var. *angustifolia* Reichenb. = *V. sativa* subsp. *nigra* (L.) Ehrh.

- V. agerii* Bubani = *V. hybrida* L.
V. aintabensis Boiss. & Hausskn. ex Boiss.
V. aintabensis (Boiss. & Hausskn. ex Boiss.) Blakelock = *V. michauxii* Sprengel
V. alba Moench = *V. sativa* L.
V. alba Medikus = *V. sativa* L.
V. amphicarpa Dorthes = *V. sativa* subsp. *amphicarpa* (L.) Batt.
V. amphicarpa L. = *V. sativa* subsp. *amphicarpa* (L.) Batt.
V. amphicarpa Lam. = *V. sativa* subsp. *amphicarpa* (L.) Batt.
V. anatolica Turrill
V. angulosa Gaterau = *V. bithynica* (L.) L.
V. angustifolia Hohen. = *V. bithynica* (L.) L.
V. angustifolia Grufb. = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. angustifolia (L.) Alef. = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. angustifolia L. = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. angustifolia Roth = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. angustifolia D. Clos = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. angustifolia var. *amphicarpa* (Dorthes) Alef. = *V. sativa* subsp. *amphicarpa* (L.) Batt.
V. angustifolia var. *cordata* (Wulfen) Boiss. = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. angustifolia var. *macrocarpa* Moris = *V. sativa* subsp. *macrocarpa* (Moris) Arcang.
V. angustifolia var. *segetalis* Koch = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. angustifolia var. *uncinata* Reichard in Rouy = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. angustifolia subsp. *cordata* (Wulfen) Janchen = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. angustifolia subsp. *segetalis* (Thuill.) Gaud. = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. angustifolia subsp. *segetalis* (Thuill.) Mettin & Hanelt = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. angustifolia subsp. *segetalis* (Thuill.) Corb. = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. anomala Boern. = *V. sepium* L.
V. arcuata Alef. = *V. faba* L.
V. arenivaga Lamotte = *V. lathyroides* L.
V. assyrica Boiss.
V. bacla Moench = *V. sativa* L.
V. baetica Schousboe ex Willk. & Lange = *V. lutea* L.
V. balansae Boiss.
V. barbazitae Ten. & Guss.
V. barbazitae Ten. & Guss. var. *barbazitae*
V. barbazitae var. *concolor* Bornm. = *V. barbazitae* Ten. & Guss.
V. barbazitae var. *incisa* (Orph.) Boiss.
V. basilei Sennen & Mauricio in Sennen = *V. sativa* subsp. *nigra* (L.) Ehrh.

- V. benthamiana* Ali = *V. mollis* Boiss. & Hausskn. ex Boiss.
V. bicolor Willd. = *V. melanops* Sibth. & Smith
V. biebersteinii C. Meyer non Besser ex M. Bieb. = *V. hyrcanica* Fischer & C. Meyer
V. biebersteinii Besser ex M. Bieb. = *V. grandiflora* Scop. var. *grandiflora*
V. biebersteinii Besser = *V. grandiflora* Scop. var. *grandiflora*
V. bifoliolata Nyman = *V. bithynica* (L.) L.
***V. bithynica* (L.) L.**
V. bithynica Schrank = *V. bithynica* (L.) L.
V. bithynica Schrank = *V. bithynica* (L.) L.
V. bithynica var. *angustifolia* Syme = *V. bithynica* (L.) L.
V. bithynica var. *genuina* Posp. = *V. bithynica* (L.) L.
V. bithynica var. *grandifolia* Posp. = *V. bithynica* (L.) L.
V. bithynica var. *grandifolia* Pers. = *V. bithynica* (L.) L.
V. bithynica var. *latifolia* Syme = *V. bithynica* (L.) L.
V. bithynica var. *macrocarpa* Sennen = *V. bithynica* (L.) L.
V. bithynica var. *major* Arcang. = *V. bithynica* (L.) L.
V. bithynica var. *sessiliflora* Beck in Reichb. = *V. bithynica* (L.) L.
V. bobartii E. Forster = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. boetica Schousboe ex Nyman = *V. lutea* subsp. *vestita* (Boiss.) Rouy
V. brachyodonta Bornm. = *V. assyriaca* Boiss.
V. brachyodonta Bornm. = *V. hyrcanica* Fischer & C. Meyer
V. campestris Schur = *V. sativa* L.
V. camptopoda Townsend = *V. mollis* Boiss. & Hausskn. ex Boiss.
V. canadensis Zuccagni = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. carnea Kotschy in Unger & Braumuller = *V. michauxii* Sprengel
V. cassubica M. Bieb. = *V. abbreviata* Fischer ex Sprengel
V. cavanillesii Martinez = *V. lutea* L.
V. chlorantha Heuffel ex Nyman = *V. abbreviata* Fischer ex Sprengel
V. ciliata Lipsky non Schur = *V. ciliatula* Lipsky
V. ciliata Schur = *V. lutea* L.
V. ciliata Schur = *V. sativa* subsp. *nigra* (L.) Ehrh.
***V. ciliatula* Lipsky**
V. cirrhata Lange = *V. lathyroides* L.
V. closiana F. Philippi = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. communis Rouy in Rouy & Fouc. = *V. sativa* L.
V. consobrina Pomel = *V. sativa* L.
V. consobrina Pomel = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. conspicua Lowe = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. cordata Wulfen ex Hoppe = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. cordata Hoppe = *V. sativa* subsp. *nigra* (L.) Ehrh.

- V. cordifolia* Wulfen in Sprengel = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. cosentinii Guss. = *V. sativa* L.
V. cuneata Guss. = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. cuneata Gren. & Godron = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. cuspidata Boiss.
V. debilis Perez Lara = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. diomedis Gren. ex Nyman = *V. sativa* L.
V. dionysiensis Mout.
V. djimilensis Koch ex Boiss. = *V. balansae* Boiss.
V. drymeja Schur = *V. sepium* L.
V. dumetorum Thuill. = *V. sepium* L.
V. equina Reichenb. = *V. faba* subsp. *faba* var. *equina* Pers.
V. equina Steudel = *V. faba* subsp. *faba* var. *equina* Pers.
V. eristalioides Maxted
V. esculenta Salisb. = *V. faba* L.
V. esdraelonensis Warb. & Eig
V. esdraonica Warb. & Eig = *V. esdraelonensis* Warb. & Eig
V. excisa Schur = *V. sativa* L.
V. faba L.
V. faba var. *equina* Steudel = *V. faba* subsp. *faba* var. *equina* Pers.
V. faba var. *humillima* Alef. = *V. faba* L.
V. faba var. *major* Murat. = *V. faba* L. subsp. *faba* var. *faba*
V. faba var. *paucijuga* (Alef.) Asch. & Graebner = *V. faba* subsp. *paucijuga* Murat.
V. faba var. *schlagintweiti* (Alef.) Thell. = *V. faba* L.
V. faba subsp. *faba* var. *equina* Pers.
V. faba L. subsp. *faba* var. *faba*
V. faba L. subsp. *faba* var. *major* Harz = *V. faba* L. subsp. *faba* var. *faba*
V. faba L. subsp. *faba* var. *minor* Beck
V. faba subsp. *paucijuga* Murat.
V. fagonii Lapeyr. = *V. pyrenaica* Pourret
V. flavida Schur = *V. lutea* L.
V. formosa Schischkin = *V. hyrcanica* Fischer & C. Meyer
V. forsteri Jordan ex Boreau = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. galeata Boiss.
V. galeata var. *linearifolia* Zoh. = *V. galeata* Boiss.
V. galilaea Plitm. & D. Zoh. in Plitm.
V. galilaea var. *faboidea* (Plitm. & D. Zoh. in Plitm.) H. Schäfer
V. galilaea subsp. *faboidea* Plitm. & D. Zoh. in Plitm. = *V. galilaea* var. *faboidea*
(Plitm. & D. Zoh. in Plitm.) H. Schäfer
V. galilaea var. *galilaea* (Plitm. & D. Zoh. in Plitm.) H. Schäfer
V. galilaea Plitm. & D. Zoh. in Plitm. subsp. *galilaea* = *V. galilaea* var. *galilaea*

(Plitm. & D. Zoh. in Plitm.) H. Schäfer

V. glabra Schleicher = *V. sativa* L. subsp. *sativa*

V. globosa Retz. = *V. sativa* L. subsp. *sativa*

V. gracilior (Popov) Popov = *V. peregrina* L.

V. grandiflora Scop.

V. grandiflora var. *biebersteiniana* Koch = *V. grandiflora* Scop. var. *grandiflora*

V. grandiflora var. *dissecta* Boiss. = *V. grandiflora* var. *incisa* Braun & Bouche

V. grandiflora Scop. var. ***grandiflora***

V. grandiflora var. ***incisa*** Braun & Bouche

V. grandiflora var. *kitaibeliana* W. Koch = *V. grandiflora* Scop. var. *grandiflora*

V. grandiflora var. *laeta* (Cesati) Fiori = *V. barbazitae* var. *barbazitae*

V. grandiflora var. *rotundata* (Ser.) Janchen = *V. grandiflora* Scop. var. *grandiflora*

V. grandiflora var. *scopoliana* Koch = *V. grandiflora* Scop. var. *grandiflora*

V. grandiflora var. *serrata* (Pant.) Rohlena = *V. grandiflora* var. *incisa* Braun & Bouche

V. grandiflora var. *sordida* (Kit.) Griseb. = *V. grandiflora* Scop. var. *grandiflora*

V. grandiflora var. *typica* Beck = *V. grandiflora* Scop. var. *grandiflora*

V. grandiflora var. *villosa* Regel = *V. grandiflora* Scop. var. *grandiflora*

V. grandiflora subsp. *biebersteinii* (Besser) Dorstal = *V. grandiflora* Scop. var. *grandiflora*

V. grandiflora subsp. *sordida* (Waldst. & Kit.) Dorstal = *V. grandiflora* Scop. var. *grandiflora*

V. guyoti Beauverd = *V. lathyroides* L.

V. hajastana Grossh. = *V. anatolica* Turrill

V. helvetica Ser. in DC. = *V. sativa* L.

V. heterophylla Reichenb. = *V. narbonensis* L.

V. heterophylla Philippi = *V. sativa* subsp. *nigra* (L.) Ehrh.

V. heterophylla C. Presl in J. Presl & C. Presl = *V. sativa* subsp. *nigra* (L.) Ehrh.

V. hirta Balbis ex Pers. = *V. lutea* L.

V. hirta Balbis ex DC. = *V. lutea* subsp. *vestita* (Boiss.) Rouy

V. hyaeniscyamus Mout.

V. hybrida L.

V. hybrida Hudson = *V. lutea* L.

V. hybrida Georgi = *V. pannonica* Crantz

V. hybrida var. *linearifolia* Popov = *V. hybrida* L.

V. hybrida var. *spuria* (Raf.) Strobl = *V. hybrida* L.

V. hyrcanica Fischer & C. Meyer

V. hyrcanica var. *brachyodonta* Bornm. = *V. assyriaca* Boiss.

V. hyrcanica var. *brachyodonta* Bornm. = *V. hyrcanica* Fischer & C. Meyer

V. hyrcanica subsp. *assyriaca* (Boiss.) Ponert = *V. assyriaca* Boiss.

V. hyrcanica subsp. *megalodonta* (Rech. f.) Ponert = *V. noeana* subsp. *megalodonta* Rach. fil.

- V. hyrcanica* subsp. *noeana* (Reuter ex Boiss.) Ponert = *V. noeana* (Reuter in Boiss.) Boiss. subsp. *noeana*
V. iberica Grossh. in Grossh. & Schischkin = *V. hyrcanica* Fischer & C. Meyer
V. imparipinnata Potonie = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. incisa M. Bieb. = *V. sativa* subsp. *incisa* (M. Bieb.) Arcang.
V. incisa Orph. ex Boiss. = *V. barbazitae* var. *incisa* (Orph.) Boiss.
V. incisiformis Stefanov = *V. sativa* subsp. *incisa* (M. Bieb.) Arcang.
V. intermedia Viv. = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. jaubertii Boiss. & Buhse = *V. hyrcanica* Fischer & C. Meyer
V. johannis Tamamschjan in Karyagin
V. johannis var. *ecirrhusa* (Popov) H. Schäfer
V. johannis var. *intermedia* Scheibe = *V. johannis* var. *procumbens* H. Schäfer
V. johannis Tamamschjan in Karyagin var. *johannis*
V. johannis var. *procumbens* H. Schäfer
V. kalakhensis Khattab, Maxted et Bisby
V. kitaibeliana Schur = *V. grandiflora* Scop. var. *grandiflora*
V. laeta Cesati = *V. barbazitae* var. *incisa* (Orph.) Boiss.
V. laevigata Smith = *V. lutea* L. subsp. *lutea*
V. lanciformis Lange in Kjoeb. = *V. sativa* subsp. *nigra* (L.) Ehrh.
***V. lathyroides* L.**
V. lathyroides All. = *V. sativa* L.
V. lathyroides var. *cirrhusa* Rigo = *V. lathyroides* L.
V. lathyroides var. *olbiensis* Steudel ex Asch. & Graebner = *V. lathyroides* L.
V. lathyroides var. *typica* Asch. & Graebner = *V. lathyroides* L.
V. lathyroides subsp. *olbensis* (Reuter & Shuttlew.) Rouy in Rouy & Fouc. = *V. lathyroides* L.
V. lathyroides subsp. *olbiensis* (Reuter) Bujor. = *V. lathyroides* L.
V. latifolia Moench = *V. narbonensis* L.
V. leganiana Rapaics & Lengn. = *V. sativa* L.
V. lentiformis Schur = *V. lutea* L.
V. leptophylla Raf. = *V. peregrina* L.
V. lerchenfeldiana Schur = *V. lutea* L.
V. leucosperma Moench = *V. sativa* L. subsp. *sativa*
V. lineata M. Bieb. = *V. pannonica* Crantz
V. linnaei Rouy in Rouy & Fouc. = *V. hybrida* L.
V. longifolia Schur = *V. sativa* L.
V. luganensis Schleicher = *V. sativa* L.
***V. lutea* L.**
V. lutea Kramer = *V. pannonica* Crantz
V. lutea Pallas ex M. Bieb. = *V. grandiflora* Scop. var. *grandiflora*
V. lutea var. *bicolor* Vel. = *V. barbazitae* Ten. & Guss. var. *barbazitae*

- V. lutea* var. *hirta* (Balbis ex DC.) Loisel. = *V. lutea* subsp. *vestita* (Boiss.) Rouy
V. lutea var. *muricata* Ser. in DC. = *V. lutea* subsp. *vestita* (Boiss.) Rouy
V. lutea var. *pallidiflora* Ser. in DC. = *V. lutea* L.
V. lutea subsp. *cavanillesii* (Martinez) Romero = *V. lutea* L.
V. lutea subsp. *lutea* L.
V. lutea subsp. *lutea* var. *laevigata* (Smith) Boiss. = *V. lutea* L. subsp. *lutea*
V. lutea subsp. *muricata* (Ser.) Guinea = *V. lutea* subsp. *vestita* (Boiss.) Rouy
V. lutea subsp. *vestita* (Boiss.) Rouy
V. macedonica Adamovic = *V. sativa* subsp. *amphicarpa* (L.) Batt.
V. macrocarpa Bertol. = *V. sativa* subsp. *macrocarpa* (Moris) Arcang.
V. maculata Pomel = *V. sativa* L.
V. maculata C. Presl = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. martini Gren. ex Nyman = *V. sativa* L.
V. megalosperma M. Bieb. = *V. peregrina* L.
V. melanocarpa Hussenot = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. melanops Sibth. & Smith
V. melanops Sibth. & Lindley = *V. melanops* Sibth. & Smith
V. melanops var. *loiseaui* Alleiz.
V. melanops Sibth. & Smith var. *melanops*
V. melanops var. *tricuspis* Bornm. = *V. melanops* Sibth. & Smith
V. michauxii Sprengel
V. michauxii var. *angustissima* Rgl. & Schmalh. = *V. michauxii* Sprengel
V. michauxii var. *stenophylla* Boiss. = *V. michauxii* Sprengel
V. minima Gilib. = *V. lathyroides* L.
V. minuta Moench = *V. bithynica* (L.) L.
V. mollis Boiss. & Hausskn. ex Boiss.
V. monadelpha Roth = *V. serratifolia* Jacq.
V. monanthos Viv. = *V. peregrina* L.
V. monodelpha Roth = *V. narbonensis* L.
V. montana Froelich ex Koch = *V. sepium* var. *montana* Kock
V. montana var. *minima* Amoen = *V. lathyroides* L.
V. morisiana Jordan ex Boreau = *V. sativa* subsp. *macrocarpa* (Moris) Arcang.
V. morosportensis Lerchenf. = *V. lutea* L.
V. mowsiana Jordan = *V. sativa* L.
V. multicaulis Wallr. = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. narbonensis Roth = *V. johannis* Tamamschjan in Karyagin
V. narbonensis L.
V. narbonensis var. *aegyptiaca* Kornhuber ex Asch. & Schweinf.
V. narbonensis var. *affinis* Kornhuber ex Asch. & Schweinf.
V. narbonensis var. *crenate* H. Schäfer = *V. narbonensis* var. *salmonia* (Mout.) H. Schäfer

- V. narbonensis* var. *culta* Alef. = *V. narbonensis* L.
V. narbonensis var. *ecirrhosa* Popov in Sched. = *V. johannis* var. *ecirrhosa* (Popov)
 H. Schäfer
V. narbonensis var. *genuina* Gren. & Godron = *V. narbonensis* L.
V. narbonensis var. *heterophylla* Rouy in Rouy & Fouc. = *V. narbonensis* L.
V. narbonensis var. *heterophylla* (Reich.) Koch = *V. narbonensis* L.
V. narbonensis var. *hortensis* Lam. = *V. narbonensis* L.
V. narbonensis var. *integrifolia* Ser. in DC. = *V. narbonensis* L.
V. narbonensis var. *integrifolia* Koch = *V. narbonensis* L.
V. narbonensis var. *intermedia* Strobl = *V. narbonensis* var. *jordanica* H. Schäfer
***V. narbonensis* var. *jordanica* H. Schäfer**
V. narbonensis var. *lutea* Freyn & Sint. = *V. johannis* Tamamschjan in Karyagin
V. narbonensis* L. var. *narbonensis
V. narbonensis var. *pilosa* Post = *V. galilaea* Plitm. & D. Zoh. in Plitm.
V. narbonensis var. *pilosa* Post = *V. narbonensis* L.
V. narbonensis var. *platycarpus* Alef. = *V. johannis* Tamamschjan in Karyagin
V. narbonensis var. *platycarpus* Alef. = *V. narbonensis* L.
***V. narbonensis* var. *salmonea* (Mout.) H. Schäfer**
V. narbonensis var. *serratifolia* (Jacq.) Ser. in DC. = *V. serratifolia* Jacq.
V. narbonensis var. *serratifolia* (Jacq.) Hermann = *V. serratifolia* Jacq.
V. narbonensis var. *serratifolia* Koch = *V. serratifolia* Jacq.
V. narbonensis var. *typica* Fiori & Paol. = *V. narbonensis* L.
V. narbonensis subsp. *faboidea* (Plitm. & D. Zoh. in Plitm.) Ponert = *V. galilaea*
 var. *faboidea* (Plitm. & D. Zoh. in Plitm.) H. Schäfer
V. narbonensis subsp. *galilaea* (Plitm. & D. Zoh. in Plitm.) Ponert = *V. galilaea*
 var. *galilaea* Plitm. & D. Zoh. in Plitm.
V. narbonensis subsp. *serratifolia* (Jacq.) Asch. & Graebner = *V. serratifolia* Jacq.
V. narbonensis subsp. *serratifolia* (Jacq.) Arcang. = *V. serratifolia* Jacq.
V. narbonensis subsp. *serratifolia* (Jacq.) Nyman = *V. serratifolia* Jacq.
V. nemoralis Steudel = *V. sativa* L.
V. nemoralis Ten. = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. nemoralis (Pers.) Boreau = *V. sativa* L. subsp. *sativa*
V. nigra var. *angustifolia* Steudel = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. nissoliana L. = *V. pannonica* Crantz
V. nissoliana Gouan = *V. pannonica* Crantz
V. nodosa Gaertner = *V. sativa* L. subsp. *sativa*
***V. noeana* Reuter ex Boiss.**
***V. noeana* subsp. *megalodonta* Rech. f.**
V. noeana* (Reuter in Boiss.) Boiss. subsp. *noeana
V. nordmanniana Overin ex Trautv. = *V. balansae* Boiss.
V. notata Gilib. = *V. sativa* L. subsp. *sativa*

- V. obocordata* Reichenb. = *V. sativa* L.
V. obovata Ser. in DC = *V. sativa* L.
V. olbiensis Reuter ex Timb.-Lagr. = *V. lathyroides* L.
V. olbiensis Reuter & Shuttlew. ex Rouy = *V. lathyroides* L.
V. oroboides Wulfen in Jacq.
V. oroboides Willd. = *V. oroboides* Wulfen in Jacq.
V. oxyphylla Schur = *V. sepium* L.
V. pallida Turcz. = *V. sativa* L.
V. pallida Jacquem. ex Baker in Hook. = *V. sativa* L.
V. pannonica Crantz
V. pannonica Crantz subsp. ***pannonica***
V. pannonica var. *purpurascens* (DC.) Ser. = *V. pannonica* subsp. *striata* (M. Bieb.) Nyman
V. pannonica var. *purpurescens* Will. Komm. = *V. pannonica* subsp. *striata* (M. Bieb.) Nyman
V. pannonica var. *striata* (M. Bieb.) Griseb. = *V. pannonica* subsp. *striata* (M. Bieb.) Nyman
V. pannonica subsp. *eupannonica* Hayek = *V. pannonica* Crantz subsp. *pannonica*
V. pannonica subsp. *purpurascens* (DC.) Arcang. = *V. pannonica* subsp. *striata* (M. Bieb.) Nyman
V. pannonica subsp. ***striata*** (M. Bieb.) Nyman
V. pannonica subsp. *striata* (M. Bieb.) Hayek = *V. pannonica* subsp. *striata* (M. Bieb.) Nyman
V. pedunculis Guett. = *V. lathyroides* L.
V. peregrina L.
V. peregrina var. *angustifolia* Rouy in Rouy & Fouc. = *V. peregrina* L.
V. peregrina var. *carnea* (Kotschy) Plitm. = *V. peregrina* L.
V. peregrina var. *glabrescens* Post = *V. peregrina* L.
V. peregrina var. *gracilior* Popov in Sched. = *V. peregrina* L.
V. peregrina var. *latifolia* Rouy in Rouy & Fouc. = *V. peregrina* L.
V. peregrina var. *leptophylla* (Raf.) Hal. = *V. peregrina* L.
V. peregrina var. *pallida* Boiss. = *V. peregrina* L.
V. peregrina var. *parviflora* Post = *V. peregrina* L.
V. peregrina subsp. *aintabensis* (Boiss. & Hausskn. ex Boiss.) Ponert = *V. aintabensis* Boiss. & Hausskn. ex Boiss.
V. peregrina subsp. *megalosperma* (M. Bieb.) Ponert = *V. peregrina* L.
V. peregrina subsp. *michauxii* (Sprengel) Ponert = *V. michauxii* Sprengel
V. peregrina subsp. *persepolitana* (Boiss.) Ponert = *V. michauxii* Sprengel
V. persepolitana Boiss. = *V. michauxii* Sprengel
V. pichleri Huter = *V. melanops* Sibth. & Smith
V. pilosa M. Bieb. = *V. sativa* subsp. *nigra* (L.) Ehrh.

- V. pimpinelloides* Mauri = *V. sativa* subsp. *incisa* (M. Bieb.) Arcang.
V. platycarpus Roth = *V. narbonensis* L.
V. platycarpus Willd. = *V. narbonensis* L.
V. pliniana (Trabut) Murat. = *V. faba* L.
V. podocarpa Boiss. & Hausskn. ex Boiss. = *V. sericocarpa* Fenzl
V. polymorpha Godron = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. praecox Jacquem. ex Arcang. = *V. lathyroides* L.
V. pratensis Wallr. = *V. sepium* L.
V. pratensis var. *ochroleuca* Wallr. = *V. sepium* L.
V. procumbens H. Schäfer = *V. johannis* var. *procumbens* H. Schäfer
V. procumbens var. *violacea* H. Schäfer = *V. johannis* Tamamschjan in Karyagin
var. *johannis*
V. purpurascens Ser. in DC. = *V. pannonica* subsp. *striata* (M. Bieb.) Nyman
V. pygmaea Link = *V. sativa* L.
V. pyrenaica Pourret
V. qatmensis Gomb.
V. remrevillensis Hussenot = *V. sativa* L.
V. rotundifolia Gilib. = *V. sepium* L.
V. sallei Timb.-Lagr. = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. sativa L.
V. sativa var. *angustifolia* Roth = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. sativa var. *angustifolia* (Grufb.) Wahlb. = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. sativa var. *cordata* (Wulfen) Arcang. = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. sativa var. *imparipinnata* Potonie = *V. sativa* L. subsp. *sativa*
V. sativa var. *leucosperma* Ser. in DC. = *V. sativa* L.
V. sativa var. *macrocarpa* Moris = *V. sativa* subsp. *macrocarpa* (Moris) Arcang.
V. sativa var. *nigra* L. = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. sativa var. *obovata* (Ser.) Gaudin = *V. sativa* subsp. *sativa*
V. sativa var. *segetalis* Thuill. (fide Baker) = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. sativa var. *umbriiflora* Alef. = *V. sativa* L. subsp. *sativa*
V. sativa var. *variifolia* Neilr. = *V. sativa* L.
V. sativa subsp. ***amphicarpa*** (L.) Batt. in Batt. & Trabut
V. sativa subsp. *amphicarpa* (Dorthes) Asch. & Graebner = *V. sativa* subsp.
amphicarpa (L.) Batt.
V. sativa subsp. *amphicarpa* var. *pseudoangustifolia* Rouy in Rouy & Fouc. = *V.*
sativa subsp. *amphicarpa* (L.) Batt.
V. sativa subsp. *amphicarpa* var. *pseudosativa* Rouy in Rouy & Fouc. = *V. sativa*
subsp. *amphicarpa* (L.) Batt.
V. sativa subsp. *angustifolia* (L.) Gaudin = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. sativa subsp. *angustifolia* (L.) Asch. & Graebner = *V. sativa* subsp. *nigra* (L.)
Ehrh.

- V. sativa* subsp. *angustifolia* (Grufb.) Asch. & Graebner = *V. sativa* subsp. *nigra* (L.) Ehrh.
- V. sativa* subsp. *angustifolia* (L.) Batt. in Batt. & Trabut = *V. sativa* subsp. *nigra* (L.) Ehrh.
- V. sativa* subsp. *angustifolia* var. *albiflora* (Lindb.) Asch. & Graebner = *V. sativa* subsp. *nigra* (L.) Ehrh.
- V. sativa* subsp. *consobrina* (Pomel) Greuter & Burdet = *V. sativa* L.
- V. sativa* subsp. *cordata* (Wulfen ex Hoppe) Asch. & Graebner = *V. sativa* subsp. *nigra* (L.) Ehrh.
- V. sativa* subsp. *cordata* var. *albiflora* (Freyn) Asch. & Graebner = *V. sativa* subsp. *nigra* (L.) Ehrh.
- V. sativa* subsp. *cordata* var. *flavida* (Schur) Asch. = *V. sativa* subsp. *nigra* (L.) Ehrh.
- V. sativa* subsp. *cordata* var. *gigantea* Freyn = *V. sativa* subsp. *nigra* (L.) Ehrh.
- V. sativa* subsp. *cordata* var. *incisa* (Wulfen ex Hoppe) Asch. & Graebner = *V. sativa* subsp. *incisa* (M. Bieb.) Arcang.
- V. sativa* subsp. *cordata* var. *incisa* (M. Bieb.) Boiss. = *V. sativa* subsp. *incisa* (M. Bieb.) Arcang.
- V. sativa* subsp. *cordata* var. *linearis* Lange = *V. sativa* subsp. *nigra* (L.) Ehrh.
- V. sativa* subsp. *cordata* var. *pulchella* (Posp.) Asch. = *V. sativa* subsp. *nigra* (L.) Ehrh.
- V. sativa* subsp. *cordata* var. *rosea* Waisb. = *V. sativa* subsp. *nigra* (L.) Ehrh.
- V. sativa* subsp. *cuneata* (Guss.) Maire in Emberger & Maire = *V. sativa* subsp. *nigra* (L.) Ehrh.
- V. sativa* subsp. *devia* J.G. de Costa
- V. sativa* subsp. *heterophylla* (C. Presl) J. Duvign = *V. sativa* subsp. *nigra* (L.) Ehrh.
- V. sativa* subsp. *incisa* (M. Bieb.) Arcang.
- V. sativa* subsp. *incisa* var. *cordata* (Wulfen ex Hoppe) Arcang. = *V. sativa* subsp. *nigra* (L.) Ehrh.
- V. sativa* subsp. *linearifolia* Stankevich = *V. sativa* subsp. *nigra* (L.) Ehrh.
- V. sativa* subsp. *macrocarpa* (Moris) Arcang.
- V. sativa* subsp. *macrocarpa* (Bert.) Kiffm. = *V. sativa* subsp. *macrocarpa* (Moris) Arcang.
- V. sativa* subsp. *nigra* (L.) Ehrh.
- V. sativa* subsp. *nigra* var. *segatalis* (Thuill.) Ser. ex DC. = *V. sativa* subsp. *nigra* (L.) Ehrh.
- V. sativa* subsp. *notata* Asch. & Graebner = *V. sativa* L. subsp. *sativa*
- V. sativa* subsp. *notata* Asch. & Graebner = *V. sativa* L. subsp. *sativa*
- V. sativa* subsp. *obovata* (Ser.) Schinz & Thell. in Schinz & R. Keller = *V. sativa* L. subsp. *sativa*
- V. sativa* subsp. *pilosa* (M. Bieb.) Plitm. & Zoh. = *V. sativa* subsp. *nigra* (L.) Ehrh.
- V. sativa* L. subsp. *sativa*
- V. sativa* subsp. *sativa* var. *alba* (Moench) Beck in Reichb. = *V. sativa* L. subsp. *sativa*

- V. sativa* subsp. *sativa* var. *carnea* (Beck) Asch. & Graebner = *V. sativa* L. subsp. *sativa*
- V. sativa* subsp. *sativa* var. *cordifolia* Asch. & Graebner = *V. sativa* L. subsp. *sativa*
- V. sativa* subsp. *sativa* var. *obcordata* Neilr. = *V. sativa* L. subsp. *sativa*
- V. sativa* subsp. *segetalis* (Thuill.) Dorstal = *V. sativa* subsp. *nigra* (L.) Ehrh.
- V. sativa* subsp. *segetalis* (Thuill.) Celak. = *V. sativa* subsp. *nigra* (L.) Ehrh.
- V. sativa* subsp. *terana* (Losa) Benedi & Molero *V. sativa* L.
- V. saxatilis* (Vent.) Tropea = *V. lathyroides* L.
- V. scepusiensis* Kit. = *V. sativa* subsp. *nigra* (L.) Ehrh.
- V. segetalis* Thuill. = *V. sativa* subsp. *nigra* (L.) Ehrh.
- V. separia* Dulac = *V. sepium* L.
- V. sepium* L.**
- V. sepium* var. *angustifolia* Koch = *V. sepium* var. *montana* Kock
- V. sepium* var. *dasycalyx* = *V. sepium* L. *sepium*
- V. sepium* var. *ericalyx* Celak.**
- V. sepium* var. *montana* Koch, D.G.D.J.**
- V. sepium* var. *ovata* Schur = *V. sepium* L. *sepium*
- V. sepium* L. var. *sepium***
- V. sepium* var. *vulgaris* Koch = *V. sepium* L. *sepium*
- V. sepium* var. *vulgaris* Gaudin = *V. sepium* L. *sepium*
- V. sepium* subsp. *montana* (Koch, D.G.D.J.) Hamet-Ahti = *V. sepium* var. *montana* Kock
- V. sericocarpa* Fenzl**
- V. sericocarpa* var. *microphylla* Boiss. = *V. sericocarpa* Fenzl
- V. sericocarpa* subsp. *mardinica* Ponert = *V. mollis* Boiss. & Hausskn. ex Boiss.
- V. sericocarpa* subsp. *mardinica* Ponert = *V. sericocarpa* Fenzl
- V. sericocarpa* subsp. *mollis* (Boiss. & Hausskn.) Ponert = *V. mollis* Boiss. & Hausskn. ex Boiss.
- V. sericocarpa* subsp. *urfae* Ponert = *V. mollis* Boiss. & Hausskn. ex Boiss.
- V. serrata* Pant. = *V. grandiflora* var. *incisa* Braun & Bouche
- V. serratifolia* Jacq.**
- V. serratifolia* Willd. = *V. serratifolia* Jacq.
- V. serratifolia* var. *integrifolia* Beck in Reichb. = *V. narbonensis* L.
- V. serratifolia* subsp. *salmonea* Mout. = *V. narbonensis* var. *salmonea* (Mout.) H. Schäfer
- V. sordida* Salisb. = *V. sepium* L.
- V. sordida* M. Bieb. = *V. grandiflora* Scop. var. *grandiflora*
- V. sordida* Willd. = *V. grandiflora* Scop. var. *grandiflora*
- V. sordida* Waldst. & Kit. = *V. grandiflora* Scop. var. *grandiflora*
- V. spuria* Raf. = *V. hybrida* L.

- V. stenophylla* Schur = *V. sativa* L.
V. striata M. Bieb. = *V. pannonica* subsp. *striata* (M. Bieb.) Nyman
V. subrotunda Schur = *V. sepium* L.
V. subterranea Ger. ex Dorthes = *V. sativa* subsp. *amphicarpa* (L.) Batt.
V. sylvestris Tournefort = *V. pannonica* Crantz
V. talpa Raym. ex Poiret = *V. pyrenaica* Pourret
V. terana Losa = *V. sativa* L.
V. thessala Spruner ex Boiss. = *V. barbazitae* var. *incisa* (Orph.) Boiss.
V. tigridis Mout.
V. timbali Lorot in Lorot & Barr = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. tollenda E.H. Krause in Sturm = *V. hybrida* L.
V. torulosa Jordan ex Boreau = *V. sativa* L. subsp. *sativa*
V. trichomera Alef. = *V. abbreviata* Fischer ex Sprengel
V. tricolor Sebast. & Mauri = *V. melanops* Sibth. & Smith
V. tricolor Schur = *V. sepium* L.
V. tridentata Gaterau = *V. lutea* L.
V. triflora Reichenb. = *V. melanops* Sibth. & Smith
V. truncatula Fischer ex M. Bieb. = *V. abbreviata* Fischer ex Sprengel
V. truncatula Reichenb. = *V. abbreviata* Fischer ex Sprengel
V. truncatula var. *major* Overin = *V. balansae* Boiss.
V. truncatula var. *major* Boiss. = *V. abbreviata* Fischer ex Sprengel
V. turkestanica Vassilk. = *V. johannis* var. *ecirrhosa* (Popov) H. Schäfer
V. uncinata Reichenb. = *V. pannonica* Crantz subsp. *pannonica*
V. uncinata Desf. ex Nyman = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. uncinata Boreau = *V. sativa* subsp. *nigra* (L.) Ehrh.
V. vestita Boiss. = *V. lutea* subsp. *vestita* (Boiss.) Rouy
V. vestita D. Clos = *V. lutea* subsp. *vestita* (Boiss.) Rouy
V. vestita var. *tuberculata* Willd. = *V. lutea* subsp. *vestita* (Boiss.) Rouy
V. vulgaris Gray = *V. faba* L.
V. vulgaris Uspensky = *V. sativa* L.
Vicioides hirsuta Moench = *V. pannonica* Crantz subsp. *pannonica*
V. hybrida Moench = *V. hybrida* L.
V. lutea Moench = *V. lutea* L.
V. sepium Moench = *V. sepium* L.
V. striata Moench = *V. pannonica* subsp. *striata* (M. Bieb.) Nyman
V. uninata Moench = *V. pannonica* Crantz subsp. *pannonica*
Wiggersia cuspidata Alef. = *V. cuspidata* Boiss.
W. lathyroides Gaertner, Meyer & Schreber = *V. lathyroides* L.
W. lutea Gaertner, Meyer & Scherber = *V. lutea* L.
W. minima Alef. = *V. lathyroides* L.
W. sepium Gaertner, Meyer & Schreber = *V. sepium* L.

APPENDIX III

Specimen citation

V. abbreviata-Davis 21766 (BM); Hohenacker s.n. (BM); Kovics 39 (E); Lamond 4901 (E); Manakyan s.n. (E); Wierzbicki 1950 (E); Arevschatyan s.n. (ERE); Adamovic 6/1897 (K); Balansa 1408 (K); Bornmuller et Bornmuller 14034 (K); Degen 2811 (K); Degen s.n. (K); Kovics s.n. (K); MB 1813 (K); Petrovic 1964 (K); Vasak s.n. (K); Alexeyenko s.n. (LE); Alexeyenko s.n. (LE); Anon. s.n. (LE); Arevschatyan s.n. (LE); Avetisyan s.n. (LE); Fedchenko s.n. (LE); Fedchenko et Fedchenko s.n. (LE); Gordyagin s.n. (LE); Grossheim s.n. (LE); Ilyinskaya s.n. (LE); Kazn s.n. (LE); Markowich s.n. (LE); Menitsky s.n. (LE); Polyanskaya s.n. (LE); Savich s.n. (LE); Shiffers s.n. (LE); Smolyaninova s.n. (LE); Steup s.n. (LE); Zedelmeyer s.n. (LE); Heussel 118 (MO); Hohenacker 19064 (MO); Hohenacker s.n. (MO); Kolenati 1456 (MO); Maxted, Bisby et Munyunenbe 6511 (SPN); Maxted, Bisby et Munyunenbe 6514 (SPN); Maxted, Bisby et Munyunenbe 6524 (SPN); Maxted, Bisby et Munyunenbe 6547 (SPN); Maxted, Bisby et Munyunenbe 6613 (SPN); Maxted, Bisby et Munyunenbe 6618 (SPN); Maxted, Bisby et Munyunenbe 6634 (SPN); Maxted, Bisby et Munyunenbe 6756 (SPN); Maxted, Bisby et Munyunenbe 6781 (SPN); Maxted, Bisby et Munyunenbe 6797 (SPN); Maxted, Bisby et Munyunenbe 6834 (SPN); Maxted, Bisby et Munyunenbe 6851 (SPN); Maxted, Bisby et Munyunenbe 6878 (SPN); Maxted, Bisby et Munyunenbe 6893 (SPN); Maxted, Bisby et Munyunenbe 6917 (SPN); Maxted, Bisby et Munyunenbe 6956 (SPN); Maxted, Bisby et Munyunenbe 6981 (SPN); Maxted, Bisby et Munyunenbe 6995 (SPN); Maxted, Bisby et Munyunenbe 7037 (SPN); Bornmuller et Bornmuller 14034 (W); Bozakman et Fitz 759 (W); Edmondson 445 (W); Manakyan 9/7/1966 (W); Kimeridze 40389 (WIR); Saakov 9447 (WIR); Stankevich 1917 (WIR); Stankevich 4443 (WIR); Stankevich 4477 (WIR); Stankevich 4498 (WIR); Stankevich 4505 (WIR); Stankevich 4614 (WIR); Stankevich 842 (WIR); Stankevich et Legotina 1067 (WIR); Stankevich et Legotina 1094 (WIR); Stankevich et Legotina 1445 (WIR); Stankevich et Legotina 1535 (WIR); Stankevich et Legotina 1562 (WIR); Stankevich et Legotina 1917 (WIR); Stankevich et Legotina 1946a (WIR); Stankevich et Legotina 908 (WIR); Stankevich et Vlasson 759 (WIR); Stankevich et Vlassov 320 (WIR); Stankevich et Vlassov 571 (WIR); Vlassov et Doronina s.n. (WIR); Vlassov et Doronina s.n. (WIR); Vlassov, Doronina et Petrova 191 (WIR); Zhilenko s.n. (WIR).

V. aintabensis-Davis et Hedge 27919 (BM); Davis et Hedge 28087 (BM); Davies 42294 (E); Davis et Hedge 28087 (E); Hausknecht s.n. (G); Davis et

Hedge 28087 (HUI); Liston et Lev-Ari 7-85-371/24 (HUI); Zohary 3752 (HUI); Cowan et Darlington 463 (K); Haussknecht s.n. (K); Samuelsson 3671 (K); Maxted, Auricht et Ehrman 4825 (SPN); Maxted, Auricht et Ehrman 4889 (SPN); Maxted, Auricht et Ehrman 4982 (SPN); Maxted, Auricht et Ehrman 5060 (SPN); Maxted, Auricht et Ehrman 5079 (SPN); Maxted, Auricht et Ehrman 5106 (SPN); Maxted, Auricht et Ehrman 5216 (SPN); Maxted, Auricht et Ehrman 5252 (SPN); Maxted, Ehrman et Auricht 4825 (SPN); Maxted, Ehrman et Auricht 5252 (SPN); Maxted, Ehrman et Khattab 2110 (SPN); Maxted, Ehrman et Khattab 2148 (SPN); Maxted, Ehrman et Khattab 2158 (SPN); Maxted, Ehrman et Khattab 2182 (SPN); Maxted, Ehrman et Khattab 2214 (SPN); Haussknecht s.n. (W).

V. anatolica-Mulkeupeanyan et Manakyan s.n. (BM); Akman 6091 (E); Coode et Jones 1730 (E); Komarovii s.n. (E); Mulkeupeanyan et Manakyan s.n. (E); Gabrielian et al s.n. (ERE); Cheese et Watson 1316 (K); Cheese et Watson 1361 (K); Lindsay 51 (K); Anon. s.n. (LE); Chernova s.n. (LE); Chernova s.n. (LE); Mroubern s.n. (LE); Mroubern s.n. (LE); Puring s.n. (LE); Allkin 83/13 (SPN); Maxted 1074 (SPN); Maxted 1091 (SPN); Maxted 1242 (SPN); Maxted 1243 (SPN); Maxted 1247 (SPN); Maxted 1252 (SPN); Maxted, Kitiki et Allkin 4498 (SPN); Bozakman et Fitz 260 (W); Frantskevich 42805 (WIR); Nikitina 380 (WIR); Pyankova 430 (WIR); Pyankova s.n. (WIR); Stankevich 1240 (WIR); Stankevich s.n. (WIR); Stankevich et Dorofeyev 2678 (WIR); Stankevich et Legotina 1184 (WIR); Stankevich et Legotina 1218 (WIR); Ulyanova s.n. (WIR); Ulyanova s.n. (WIR); Ulyanova s.n. (WIR); Zaktreger s.n. (WIR).

V. assyriaca-Davis et Hedge 28327 (BM); Kotschy 10837 (BM); Low 194 (BM); Balls 2147 (E); Davis et Hedge 28327 (E); Kotschy 213 (G); Zohary et Plitmann 18603-61 (HUI); Kotschy 213 (K); Kotschy 213 (K); Kotschy 78.98 (K); Polunin 5149 (K); Maxted, Auricht et Ehrman 4840 (SPN); Maxted, Auricht et Ehrman 4933 (SPN); Maxted, Auricht et Ehrman 4961 (SPN); Maxted, Auricht et Ehrman 5041 (SPN); Maxted, Auricht et Ehrman 5150 (SPN); Maxted, Auricht et Ehrman 5165 (SPN); Maxted, Auricht et Ehrman 5684 (SPN); Haradjian 47 (W); Kotschy 213 (W); Kotschy 213a (W); Noe s.n. (W).

V. balansae-Balls 2147 (BM); Busch s.n. (BM); Frazer Jenkins 3100 (BM); Balls 1880 (E); Busch s.n. (E); Davis et Hedge 29720 (E); Handgeyan s.n. (E); Schelkovnikov et Kara-Murza s.n. (E); Stainton et Henderson 6195 (E); Akverdov s.n. (ERE); Balansa 1408 (G); Anon. s.n. (K); Balansa 1408 (K); Balansa 1408a (K); Balls 1880 (K); Busch s.n. (K); Handgeyan s.n. (K); Stainton 8398 (K); Stainton et Henderson 6195 (K); Akinfiyev s.n. (LE); Alexeyenko s.n. (LE); Alexeyenko s.n. (LE); Anon. s.n. (LE); Busch et Busch s.n. (LE);

Busch et Busch s.n. (LE); Busch et Busch s.n. (LE); Busch et Busch s.n. (LE); Dmitriyeva s.n. (LE); Endaurova s.n. (LE); Juzepchuk s.n. (LE); Komarov et Komarov s.n. (LE); Leskov et Rusaleyev s.n. (LE); Lipsky s.n. (LE); Poretsky s.n. (LE); Ruppecht s.n. (LE); Shiffers s.n. (LE); Shiffers et Moreva s.n. (LE); Steup s.n. (LE); Vasilyev s.n. (LE); Voronov s.n. (LE); Voronov s.n. (LE); Maxted, Bisby et Munyunyembe 6559 (SPN); Maxted, Bisby et Munyunyembe 6617 (SPN); Maxted, Bisby et Munyunyembe 6780 (SPN); Maxted, Bisby et Munyunyembe 6894 (SPN); Maxted, Bisby et Munyunyembe 6964 (SPN); Maxted, Bisby et Munyunyembe 6979 (SPN); Balansa 1408 (W); Duzenli 582 (W); Schischkin s.n. (W); Yuvaratskhgliya et Darbil s.n. (W); Barulina 5910 (WIR); Bordodymova 9523 (WIR); Borkovskaya 9418 (WIR); Kimeridze 40399 (WIR); Sinskaya 5914 (WIR); Sinskaya et Gorsky s.n. (WIR); Sinskaya et Sharapova s.n. (WIR); Stankevich 4478 (WIR); Stankevich 4903 (WIR); Stankevich et Dorofeyev 2997 (WIR); Stankevich et Legotina 1946 (WIR); Stankevich et Legotina 2095 (WIR); Stankevich et Legotina 2250 (WIR); Stankevich et Legotina 2255 (WIR); Stankevich et Legotina 2291 (WIR); Stankevich et Legotina 2318 (WIR); Vlassov s.n. (WIR).

V. barbazitae var. *barbazitae*-Dimonie 409 (E); Huet et Pavillion 52 (E); Bouchard 1690 (K); Gavioli 2705 (OXF); Maxted, Kitiki et Allkin 4319 (SPN); Maxted, Kitiki et Allkin 4429 (SPN); Maxted, Kitiki et Allkin 4436 (SPN); Heldreich s.n. (W); Huet et Huet 52 (W); Huet et Huet 52 (W).

V. barbazitae var. *incisa*-Anon. s.n. (E); Heldreich et Holzmann s.n. (E); Maxted, Kitiki et Allkin 4317 (SPN); Haussknecht s.n. (W); Orphanides 594 (W).

V. bithynica-Blow s.n. (BM); Bowden et Sims 726 (BM); Bowden et Sims 830 (BM); Campbell s.n. (BM); Campbell s.n. (BM); Cannon et Cannon 4157 (BM); Davis et Sutton 62722 (BM); Davis et Sutton 63966 (BM); Davis et Sutton 64400 (BM); De Witte 17016 (BM); Fleming 111 (BM); Foggitt s.n. (BM); Fox 394 (BM); Guiol 6385 (BM); Guiol s.n. (BM); Guiol s.n. (BM); Hall et Hall 77/55 (BM); Hilton 1903 (BM); Ipse s.n. (BM); Morris 1915 (BM); Queralt et Pascual 3022 (BM); Roper s.n. (BM); Sewell 369 (BM); Sintenis 50 (BM); Slatter s.n. (BM); Stace et Cotton s.n. (BM); Standen s.n. (BM); Thompson s.n. (BM); Vachell et Vachell s.n. (BM); Vaughan s.n. (BM); Wheeler 367 (BM); White s.n. (BM); White s.n. (BM); Crawford s.n. (E); Dorfler 61 (E); Dorfler s.n. (E); Heldreich et Holzmann s.n. (E); Kupicha 164 (E); White s.n. (E); Zohary 1083 (HUJ); Zohary et Orshan 25403/21 (HUJ); Zohary et Orshan 26412-3 (HUJ); Alston et Sandwith 1718 (K); Atchley 560 (K); Brummitt, Hunt et Leistner 5097 (K); Davis 33107 (K); Davis 33607 (K); Devis s.n. (K); D'Alleizette 1319

(K); Eastes s.n. (K); Gregory s.n. (K); Harris 176/7 (K); Hooker s.n. (K); Jackson s.n. (K); Jermyn s.n. (K); Kelley 1021 (K); Lousley 449 (K); Lousley s.n. (K); Lousley s.n. (K); Makins 449 (K); Maly s.n. (K); Meikle s.n. (K); Milne-Redhead 2145 (K); Narducci s.n. (K); Parker s.n. (K); Pennington 203 (K); Picquet 1905 (K); Riley 406 (K); Roffeg s.n. (K); Sandwith s.n. (K); Sommer 1704 (K); Summerhayes 4146 (K); Tedd 1697 (K); Thompson s.n. (K); Thompson s.n. (K); Thurston 3/6/1920 (K); Thurston s.n. (K); Townsend s.n. (K); Turrill 324 (K); Vatova s.n. (K); Vatova s.n. (K); Webster 414 (K); White s.n. (K); Wolfe 1853 (K); Anon. s.n. (LE); Bochkin s.n. (LE); Gelde s.n. (LE); Puring s.n. (LE); Smirnova s.n. (LE); Stankov s.n. (LE); Tsvelev s.n. (LE); Aellen 4758 (MO); Bertrand s.n. (MO); Bisby 2012 (SPN); Combes s.n. (SPN); Kelsall s.n. (SPN); Maxted 1003 (SPN); Maxted 1494 (SPN); Maxted, Bisby et Munyunyenbe 6576 (SPN); Maxted, Bisby et Munyunyenbe 7172 (SPN); Maxted & Chehadeh 6404 (SPN); Maxted & Chehadeh 6414 (SPN); Maxted, Ehrman et Khattab 1995 (SPN); Maxted, Ehrman et Khattab 2009 (SPN); Maxted, Ehrman et Khattab 2029 (SPN); Maxted, Ehrman et Khattab 2037 (SPN); Maxted, Ehrman et Khattab 2058 (SPN); Maxted, Ehrman et Khattab 2098 (SPN); Maxted, Kitiki et Allkin 4291 (SPN); Maxted, Kitiki et Allkin 4395 (SPN); Maxted, Kitiki et Allkin 4488 (SPN); Burri et Krendl s.n. (W); Burri et Krendl s.n. (W); Corccinato s.n. (W); Guers 4905 (W); Kennedy 1195 (W); Krendl s.n. (W); Krendl et Krendl s.n. (W); Rigo 8 (W); Emmerikh et Filatenko 2867 (WIR); Stankevich 5011 (WIR); Stankevich 5021 (WIR); Stankevich s.n. (WIR); Stankevich et Dorofeyev 2679 (WIR); Stankevich et Vlassov 499 (WIR).

V. ciliatula-Gadreenyan s.n. (E); Stankevich 723 (E); Tobey 157 (E); Furse et Syngé 158 (K); Grossheim et Schischkin 289 (K); Lipsky 4/70.2 (K); Lipsky s.n. (LE); Stankevich 723 (MO); Maxted, Bisby et Munyunyenbe 6604 (SPN); Maxted, Bisby et Munyunyenbe 6637 (SPN); Maxted, Bisby et Munyunyenbe 6645 (SPN); Maxted, Bisby et Munyunyenbe 6757 (SPN); Maxted, Bisby et Munyunyenbe 6767 (SPN); Bozakman et Fitz 764 (W); Stankevich 723 (W); Khinchuk 5942 (WIR); Sinskaya 9620 (WIR); Stankevich 10 (WIR); Stankevich s.n. (WIR); Stankevich s.n. (WIR); Stankevich s.n. (WIR); Stankevich et Dorofeyev 2498 (WIR); Stankevich et Dorofeyev 2828 (WIR); Stankevich et Dorofeyev 2901 (WIR); Stankevich et Legotina 954 (WIR); Stankevich et Vlasson s.n. (WIR); Stankevich et Vlassov 114 (WIR); Stankevich et Vlassov 496a (WIR); Teplyakova et Seferova 500351 (WIR); Voluznyova et Semyonova 43517 (WIR).

V. cuspidata-Balansa 204 (BM); Bornmuller 9443 (BM); Postian s.n. (BM); Bornmuller 9443 (E); Brenan 11028 (E); Davis 3121K (E); Davis 41733 (E); Kupicha C9599 (E); Boissier s.n. (G); Liston et Lev-Ari 7-85-366/14 (HUJ);

Balansa 204 (K); Boissier 6/1842 (K); Bornmuller 9441 (K); Townsend 69/87 (K); Maxted, Auricht et Ehrman 4804 (SPN); Maxted, Auricht et Ehrman 4874 (SPN); Maxted, Auricht et Ehrman 4915 (SPN); Maxted, Auricht et Ehrman 4922 (SPN); Maxted, Auricht et Ehrman 5020 (SPN); Maxted, Auricht et Ehrman 5160 (SPN); Maxted, Auricht et Ehrman 5274 (SPN); Maxted, Auricht et Ehrman 5305 (SPN); Maxted et Chehadeh 6303 (SPN); Maxted, Ehrman et Khattab 2197 (SPN); Maxted, Ehrman et Khattab 2271 (SPN); Maxted, Ehrman et Khattab 2286 (SPN); Maxted, Ehrman et Khattab 2338 (SPN); Maxted, Ehrman et Khattab 2339 (SPN); Maxted, Ehrman et Khattab 2380 (SPN); Maxted, Ehrman et Khattab 2388 (SPN); Maxted, Ehrman et Khattab 2415 (SPN); Maxted, Ehrman et Khattab 2425 (SPN); Maxted, Ehrman et Khattab 2428 (SPN); Maxted, Ehrman et Khattab 2440 (SPN); Maxted, Ehrman et Khattab 2448 (SPN); Maxted, Ehrman et Khattab 2547 (SPN); Maxted, Ehrman et Khattab 2664 (SPN); Maxted, Ehrman et Khattab 2672 (SPN); Maxted, Ehrman et Khattab 2687 (SPN); Maxted, Ehrman et Khattab 2690 (SPN); Maxted, Ehrman et Khattab 2711 (SPN); Maxted, Ehrman et Khattab 2734 (SPN); Maxted, Kitiki et Allkin 4080 (SPN); Maxted, Kitiki et Allkin 4268 (SPN); Maxted, Kitiki et Allkin 4297 (SPN); Maxted, Kitiki et Allkin 4305 (SPN); Maxted, Kitiki et Allkin 4315 (SPN); Maxted, Kitiki et Allkin 4354 (SPN); Maxted, Kitiki et Allkin 4362 (SPN); Maxted, Kitiki et Allkin 4398 (SPN); Maxted, Kitiki et Allkin 4447 (SPN); Maxted, Kitiki et Allkin 4483 (SPN); Maxted, Kitiki et Allkin 4500 (SPN); Balansa 204 (W); Bornmuller 9440 (W); Bozakman et Fitz 264 (W); Fitz et Spitzenburger 246 (W); Montbret s.n. (W).

V. dionysiensis-Mouterde 6937 (G); Maxted, Ehrman et Khattab 2498 (SPN); Maxted, Ehrman et Khattab 2507 (SPN); Maxted, Ehrman et Khattab 2560 (SPN); Maxted, Ehrman et Khattab 2582 (SPN).

V. eristalioides-Maxted, Kitiki et Allkin 4256 (SPN); Maxted, Kitiki et Allkin 4385 (SPN); Maxted, Kitiki et Allkin 4393 (SPN); Tan, Moçambique, Minns et Maxted 1 (AARI).

V. esdraelonensis-Zohary et Plitmann 624511 (E); Zohary et Plitmann 62456 (HUJ).

V. faba subsp. *faba* var. *equina*-Taquet 4199 (E); Khattab 38 (SPN).

V. faba subsp. *faba* var. *faba*-Rosas 801 (BM); Boulos s.n. (CAIM); Naguib s.n. (CAIM); Shabetai 4846 (CAIM); Buysman 95 (E); D'Argy 56 (E); Giles s.n. (E); Ho-Ch'ang Chow 232 (E); Lace 450 (E); Meyers et Dinsmore 4890 (E);

Podlech 12031 (E); Walton s.n. (E); Yokohama Nursery Co. s.n. (E); Bonnet s.n. (K); Graham 9/1920 (K); Hubbard 11832 (K); Prior 1843 (K); Stuart Mill 5/1863 (K); King et al 266 (MO); Schmitt et Schmitt 124 (MO); Steyermark et Liesner s.n. (MO); Vazquez 2073 (MO); Bisby 1948 (SPN); Maxted, Allkin et Khattab 4017 (SPN); Maxted, Allkin et Khattab 4032 (SPN); Maxted, Allkin et Khattab 4187 (SPN); Maxted, Allkin et Khattab 4203 (SPN); Maxted, Allkin et Khattab 4285 (SPN); Maxted, Allkin et Khattab 4371 (SPN); Maxted, Allkin et Khattab 4389 (SPN); Detenschlay 43 (W); Reichenbach s.n. (W); Ronniger s.n. (W).

V. faba subsp. *faba* var. *minor*-Anon. 12327 (CAIM); Parmanand 747 (E).

V. faba subsp. *paucijuga*-Khattab 56 (SPN).

V. galeata-Bornmuller 1717 (BM); Norris s.n. (BM); Dinsmore 1370 (E); Lowne 1863 (E); Plitmann 1/15 (E); Zohary et Plitmann s.n. (E); Aucher-Eloy 971 (G); Eig, Zohary et Feinbrun 1145 (HUI); Zohary 1146 (HUI); Zohary et Plitmann 42455 (HUI); Aucher-Eloy 971 (K); Ball s.n. (K); Boissier 4/1846 (K); Feinbrun et Grizi 660 (K); Pirard 1846 (K); Feinbrun et Grizi 660 (MO); Allkin 83/47 (SPN); Allkin 83/60 (SPN); Allkin 83/99 (SPN); Maxted 1080 (SPN); Maxted 1099 (SPN); Maxted 1119 (SPN); Maxted 1147 (SPN); Maxted 1178 (SPN); Maxted 1253 (SPN); Maxted 1303 (SPN); Maxted, Kitiki et Allkin 4133 (SPN); Otto 84 (SPN); Boissier 51 (W); Bornmuller 516 (W); Kotschy s.n. (W).

V. galilaea-Hayne s.n. (K).

V. galilaea var. *faboidea*-Davis et Polunin 25282 (BM); Davis et Polunin 25282 (E); Guichard Tur/16/62 (E); Eig, Zohary et Plitmann 1171 (HUI); Feinbrun 18021 (HUI); Plitmann 1003 (HUI); Plitmann 1181 (HUI); Plitmann 1460 (HUI); Yitzhaqi 17885 (HUI); A., C. et W. 701 (K); Davis 42324 (K); Davis et Hedge 26379 (K); Davis et Hedge 27489 (K); Davis et Polunin 25282 (K); Davis et Polunin 26048 (K); Guichard 16/62 (K); Hayne s.n. (K); Sintenis 370 (K); Townsend 71/79 (K); Van der Maesen 2167 (K); Van der Maesen 2167 (K); Bisby 1233 (SPN); Khattab 15 (SPN); Khattab 54 (SPN); Macfarlane 559 (SPN).

V. galilaea var. *galilaea*-Norris s.n. (BM); Zohary et Plitmann 2511446 (E); Feinbrun 1177 (HUI); Feinbrun 1204 (HUI); Plitmann 1173 (HUI); Zohary 1805 (HUI); Zohary et Plitmann 1705 (HUI); Khattab 153 (SPN); Khattab 174 (SPN); Khattab 175 (SPN); Khattab 176 (SPN); Khattab 26 (SPN); Khattab 31 (SPN); Khattab 46 (SPN); Khattab 48 (SPN); Khattab 72 (SPN).

V. grandiflora var. *grandiflora*-Arevschatyan s.n. (BM); Coile 1672 (BM); Davis et Polunin 25777 (BM); St.Lager s.n. (BM); Moldenke et Moldenke 26842 (CAIM); Crawford 50 (E); Davis et Hedge 26870 (E); Davis et Polunin 25777 (E); Grossheim, Ilinskaya et Kirpicks.n. (E); Heldreich s.n. (E); Heldreich s.n. (E); Hohenacker 1838 (E); Scott 122 (E); Sintenis 185 (E); Steurer 20 (E); Wagner s.n. (E); Akverdov et Mirozeva s.n. (ERE); Zohary et Plitmann 2561-43 (HUI); Zohary et Zohary 73/5 (HUI); Balls 1641 (K); Bujorean 1281 (K); Butler 6/1954 (K); Prior s.n. (K); Abramov s.n. (LE); Akinfiyev s.n. (LE); Alexeyenko s.n. (LE); Alexeyenko s.n. (LE); Averkin s.n. (LE); Gadzhir s.n. (LE); Gordyagin s.n. (LE); Grossheim et Ilinskaya s.n. (LE); Koch s.n. (LE); Lipsky s.n. (LE); Manakyan s.n. (LE); Medvedeva s.n. (LE); Medvedeva s.n. (LE); Pastukhov s.n. (LE); Poyarkova s.n. (LE); Shishkin s.n. (LE); Shishkin s.n. (LE); Duncan 9579 (MO); Faircloth 4197 (MO); Hermann 11411 (MO); Jasiewicz 37 (MO); Tauscher s.n. (MO); Babac 91 (SPN); Macfarlane 401 (SPN); Macfarlane 461 (SPN); Maxted 1079 (SPN); Maxted 1086 (SPN); Maxted 1101 (SPN); Maxted 1111 (SPN); Maxted 1222 (SPN); Maxted 1257 (SPN); Maxted 1264 (SPN); Maxted, Bisby et Munyunenbe 7591 (SPN); Maxted, Kitiki et Allkin 4460 (SPN); Maxted, Kitiki et Allkin 4490 (SPN); Maxted, Kitiki et Allkin 4683 (SPN); Maxted, Kitiki et Allkin 4691 (SPN); Friedricchsthal s.n. (W); Haussknecht s.n. (W); Jasiewicz 37 (W); Jasiewicz et Zarzycki 133 (W); Krendl s.n. (W); Krendl s.n. (W); Krendl s.n. (W); Krendl s.n. (W); Krendl et Krendl 5/7/1976 (W); Krendl et Krendl s.n. (W); Krendl et Krendl s.n. (W); Krendl et Krendl s.n. (W); Kummert et Muck 33 (W); Leute 187 (W); Schneider s.n. (W).

V. grandiflora var. *incisa*-Davis 34721 (E); Deiriz 4588 (E); Maxted, Kitiki et Allkin 4325 (SPN); Maxted, Kitiki et Allkin 4419 (SPN); Maxted, Kitiki et Allkin 4430 (SPN); Corzizak s.n. (W); Krendl s.n. (W); Krendl et Krendl s.n. (W); Montbret s.n. (W).

V. hyaeniscyamus-Mouterde 6596 (G); Maxted et Chehadeh 6308 (SPN); Maxted et Chehadeh 6329 (SPN); Maxted et Chehadeh 6363 (SPN); Maxted et Chehadeh 6382 (SPN); Maxted et Chehadeh 6399 (SPN);

V. hybrida- Boulos et Al-Eisawi 5314 (BM); Davis et Hedge 26226 (BM); Davis et Polunin 25199 (BM); Millward 5 (BM); Muller s.n. (BM); Rechinger 4554 (BM); Feinbrun, Grizi et Jacobovitch 346 (CAI); Edmondson et McClintock 2185 (E); Facom 273 (E); Gathorne-Hardy 627 (E); Podlech 10756 (E); Polunin 5298 (E); Popov et Vvedensky 268 (E); Stebbing 29 (E); Eig, Zohary et Feinbrun 1249 (HUI); Plitmann 1268 (HUI); Zohary et Orshan 01501-21 (HUI); Bicknell et Pollini 1877 (K); Gillett 6600 (K); Hepper 3165 (K); Lombardelly s.n. (K);

Grigoryan s.n. (LE); Grossheim s.n. (LE); Grossheim s.n. (LE); Kazn s.n. (LE); Popov s.n. (LE); Vasilyev s.n. (LE); Billot 3056 (MPU); De Valsines s.n. (MPU); Magnol s.n. (MPU); St.Hilaire s.n. (MPU); Khattab et Maxted 1041 (SPN); Khattab, Bisby et Maxted 1032 (SPN); Maxted 1002 (SPN); Maxted 1022 (SPN); Maxted et Chehadeh 6313 (SPN); Maxted et Chehadeh 6328 (SPN); Maxted et Chehadeh 6349 (SPN); Maxted et Chehadeh 6365 (SPN); Maxted et Chehadeh 6381 (SPN); Maxted et Chehadeh 6392 (SPN); Maxted et Chehadeh 6401 (SPN); Maxted et Chehadeh 6413 (SPN); Maxted, Ehrman et Auricht 4835 (SPN); Maxted, Ehrman et Auricht 5273 (SPN); Maxted, Ehrman et Auricht 5308 (SPN); Maxted, Ehrman et Khattab 1803 (SPN); Maxted, Ehrman et Khattab 1900 (SPN); Maxted, Ehrman et Khattab 1955 (SPN); Maxted, Ehrman et Khattab 2051 (SPN); Maxted, Ehrman et Khattab 2224 (SPN); Maxted, Ehrman et Khattab 2290 (SPN); Maxted, Ehrman et Khattab 2387 (SPN); Maxted, Ehrman et Khattab 2405 (SPN); Maxted, Ehrman et Khattab 2637 (SPN); Maxted, Ehrman et Khattab 2679 (SPN); Maxted, Ehrman et Khattab 2691 (SPN); Maxted, Ehrman et Khattab 2714 (SPN); Maxted, Kitiki et Allkin 4011 (SPN); Maxted, Kitiki et Allkin 4089 (SPN); Maxted, Kitiki et Allkin 4226 (SPN); Maxted, Kitiki et Allkin 4335 (SPN); Maxted, Kitiki et Allkin 4381 (SPN); Maxted, Kitiki et Allkin 4427 (SPN); Maxted, Kitiki et Allkin 4487 (SPN); Burri et Krendl s.n. (W); Korb s.n. (W); Krendl s.n. (W); Krendl s.n. (W); Krendl et Krendl s.n. (W); Krendl et Krendl s.n. (W); Meikle 2453 (W).

V. hyrcanica-Bornmuller 6682 (BM); Maunsell s.n. (BM); Archibald 1982 (E); Hedge et Wendelbo 3252 (E); Jakivoma 269 (E); Tong 259 (E); Bungeanum s.n. (G); Danin, Baum et Plitmann 236623 (HUI); Danin, Baum et Plitmann 65-650 (HUI); Zohary 5711024 (HUI); Aitchison 604 (K); Furse 6621 (K); F. et M. 280 (K); Pichler 1882 (K); Novikov 280 (LE); Androsov 2880 (MO); Anon. s.n. (MO); Jakivoma 269 (MO); Macfarlane 609 (SPN); Macfarlane 611 (SPN); Macfarlane 612 (SPN); Macfarlane 613 (SPN); Maxted, Bisby et Munyunyenbe 6821 (SPN); Maxted, Bisby et Munyunyenbe 6902 (SPN); Maxted et Potokina *hyrcanica* 7863 (SPN); Maxted et Potokina 7882 (SPN); Maxted et Potokina 7983 (SPN); Maxted et Potokina 8023 (SPN); Maxted et Potokina 8031 (SPN); Maxted et Potokina 8040 (SPN); Alnford 1861 (W); Androsov 2880 (W); Bornmuller et Bornmuller 6682 (W); Jakivoma 269 (W); Pichler s.n. (W); Frantskevich 42806 (WIR); Frantskevich s.n. (WIR); Gudkova s.n. (WIR); Gudkova s.n. (WIR); Leokene s.n. (WIR); Muratova 6205 (WIR); Shcherbakov s.n. (WIR); Stankevich 4589 (WIR); Stankevich 807 (WIR); Stankevich s.n. (WIR); Stankevich s.n. (WIR); Stankevich et Legotina 1374 (WIR); Stankevich et Legotina 1384 (WIR); Ulyanova s.n. (WIR); Vlassov 32 (WIR); Zhilenko s.n. (WIR).

V. johannis-Hauptin 3426 (BM); Sennen 7395 (BM); Ball s.n. (E); Baytop et Atila 10951 (E); Davis et Hedge 26379 (E); Davis et Polunin 26048 (E); Helbaek 2438 (E); Podlech 10670 (E); Reverchon 951 (E); Anon. s.n. (K); Ayasse s.n. (K); Dinsmore 20339 (K); Favrat et Barbey s.n. (K); Gilliat-Smith 1209 (K); Gilliat-Smith 566 (K); Hausser s.n. (K); Hewer 3852 (K); Meikle 5003 (K); Postian 5/1886 (K); Schneider 128 (K); Alexeyenko s.n. (LE); Alexeyenko s.n. (LE); Beideman s.n. (LE); Fedoseyev s.n. (LE); Karpinsky s.n. (LE); Koch s.n. (LE); Shishkin s.n. (LE); Tamamschian 265/317 (LE); Vasilyev s.n. (LE); Shah et Khan 505 (MO); Maxted, Bisby et Munyunyenbe 6638 (SPN); Maxted, Bisby et Munyunyenbe 6647 (SPN); Maxted, Bisby et Munyunyenbe 6766 (SPN); Maxted, Bisby et Munyunyenbe 7579 (SPN); Maxted et Chehadeh 6301 (SPN); Maxted et Chehadeh 6306 (SPN); Maxted et Potokina 7857 (SPN); Maxted et Potokina 7875 (SPN); Eiselt s.n. (W); Krendl et Krendl s.n. (W); Vetter s.n. (W).

V. johannis var. *ecirrhosa*-Vvedensky 270 (E); Vvedensky 270 (MO).

V. johannis var. *johannis*-Alston et Sandwith 1756 (BM); Coode et Jones 1489 (E); Davis et Hedge 27489 (E); Bowles Scholarship Bot. Exp. 1930 (K); Khattab 149 (SPN); Khattab 210 (SPN); Khattab 214 (SPN); Khattab 215 (SPN); Khattab 216 (SPN); Khattab 218 (SPN); Khattab 503 (SPN); Khattab 55 (SPN); Maxted, Allkin et Khattab 4211 (SPN); Maxted, Allkin et Khattab 4250 (SPN); Maxted, Allkin et Khattab 4486 (SPN); Maxted, Ehrman et Khattab 1709 (SPN); Maxted, Ehrman et Khattab 1945 (SPN); Maxted, Ehrman et Khattab 1954 (SPN); Maxted, Ehrman et Khattab 1968 (SPN); Maxted, Ehrman et Khattab 2048 (SPN); Maxted, Ehrman et Khattab 2089 (SPN); Maxted, Ehrman et Khattab 2416 (SPN); Maxted, Kitiki et Allkin 4014 (SPN); Maxted, Kitiki et Allkin 4022 (SPN); Maxted, Kitiki et Allkin 4061 (SPN).

V. johannis var. *procumbens*-Dudley 34682 (BM); Davis et Hedge 28917 (E); Ehim 603 (E); Jacobs 6499 (E); Davis et Dodds 18770 (K); Davis et Hedge 28917 (K); Davis et Hedge 28917 (K); Furse 7344 (K); Hennipman et al 1225 (K); Heter s.n. (K); Jacobs 6499 (K); Kotte 1136 (K); Meebold s.n. (K); Noe s.n. (K); Pichler s.n. (K); Porta s.n. (K); Rigo s.n. (K); Turrill 14 (K); Maxted, Ehrman et Auricht 4880 (SPN); Maxted, Ehrman et Auricht 4930 (SPN); Maxted, Ehrman et Auricht 4949 (SPN); Maxted, Ehrman et Auricht 5272 (SPN); Maxted, Ehrman et Auricht 5289 (SPN); Maxted, Ehrman et Auricht 6167 (SPN); Maxted, Ehrman et Khattab 1858 (SPN); Maxted, Ehrman et Khattab 2036 (SPN); Maxted, Ehrman et Khattab 2059 (SPN); Maxted, Ehrman et Khattab 2067 (SPN); Maxted, Ehrman et Khattab 2094 (SPN); Maxted, Ehrman et Khattab 2094 (SPN); Maxted, Ehrman et Khattab 2250

(SPN); Maxted, Ehrman et Khattab 2329 (SPN); Maxted, Ehrman et Khattab 2394 (SPN); Maxted, Ehrman et Khattab 2418 (SPN); Maxted, Kitiki et Allkin 4146 (SPN); Maxted, Kitiki et Allkin 4154 (SPN); Maxted, Kitiki et Allkin 4165 (SPN); Maxted, Kitiki et Allkin 4468 (SPN); Maxted, Kitiki et Allkin 4701 (SPN); Tithcott 19 (SPN).

V. kalakhensis-Maxted et Chehadeh 6309 (SPN); Maxted et Chehadeh 6383 (SPN); Maxted et Chehadeh 6391 (SPN); Maxted, Ehrman et Khattab 1764 (SPN); Maxted, Ehrman et Khattab 1770 (SPN); Maxted, Ehrman et Khattab 1780 (SPN); Maxted, Ehrman et Khattab 1802 (SPN); Maxted, Ehrman et Khattab 1825 (SPN); Maxted, Ehrman et Khattab 1841 (SPN).

V. lathyroides-Balansa 203 (BM); MacKeever 945 (BM); Parquet et Coumany s.n. (BM); Wahlstedt s.n. (CAIM); Ahles et Jackson 53154 (E); Ball s.n. (E); Billot 174 (E); Boufford 15929 (E); Camperio 1084 (E); Cosson 18 (E); Davis et Hedge 26233 (E); Rapaics 849 (E); Oganessian s.n. (ERE); Ball s.n. (HUI); Danin s.n. (HUI); Shmida 1303 (HUI); A., C. et W. 1320 (K); Johansson s.n. (K); Kennedy 585 (K); Raine 1004 (K); Samuelsson 1094 (K); Grigoryan s.n. (LE); Grossheim s.n. (LE); Lipsky s.n. (LE); Lipsky s.n. (LE); Popov s.n. (LE); Tselev s.n. (LE); Boufford 15929 (MO); Bujorean 801 (MO); Macoun 79688 (MO); Anon. s.n. (SPN); Bisby 1879 (SPN); Bisby 1884 (SPN); Bisby 1895 (SPN); Bromfield s.n. (SPN); Holm-Nielsen et Jeppesen 666 (SPN); Maxted 1057 (SPN); Maxted 1077 (SPN); Maxted 1081 (SPN); Maxted 1082 (SPN); Maxted 1115 (SPN); Maxted 1123 (SPN); Maxted 1144 (SPN); Maxted, Ehrman et Auricht 5552 (SPN); Maxted, Ehrman et Auricht 6248 (SPN); Maxted, Ehrman et Khattab 2427 (SPN); Maxted, Ehrman et Khattab 2487 (SPN); Maxted, Ehrman et Khattab 2493 (SPN); Maxted, Ehrman et Khattab 2527 (SPN); Maxted, Ehrman et Khattab 2531 (SPN); Maxted, Ehrman et Khattab 2555 (SPN); Maxted, Ehrman et Khattab 2556 (SPN); Maxted, Ehrman et Khattab 2572 (SPN); Maxted, Ehrman et Khattab 2599 (SPN); Maxted, Kitiki et Allkin 4140 (SPN); Maxted, Kitiki et Allkin 4184 (SPN); Maxted, Kitiki et Allkin 4301 (SPN); Maxted, Kitiki et Allkin 4304 (SPN); Maxted, Kitiki et Allkin 4408 (SPN); Maxted, Kitiki et Allkin 4409 (SPN); Maxted, Kitiki et Allkin 4421 (SPN); Maxted, Kitiki et Allkin 4435 (SPN); Maxted, Kitiki et Allkin 4446 (SPN); Andersen s.n. (W); Krendl 5/5/1976 (W); Krendl s.n. (W); Larsen, Larsen et Neilsen 279 (W); Uluocak 22 (W); Zeljazova 665 (W); Teplyakova et Seferova 500352 (WIR).

V. lutea-Russell s.n. (K); Maxted 1498 (SPN); Stankevich et Dorofeyev 2678 (WIR); Stankevich et Legotina 840 (WIR).

V. lutea subsp. *lutea*-Aldridge 1191 (BM); Cannon et Cannon 4716 (BM); Lewalie 8975 (BM); Anon. s.n. (E); De Witte 17186 (MO); Allkin 83/1 (SPN); Babac 10 (SPN); Babac 11 (SPN); Bisby 1804 (SPN); Bisby 1813 (SPN); Bisby 1814 (SPN); Bisby 1839 (SPN); Bisby 1869 (SPN); Bisby 1938 (SPN); Bisby 1972 (SPN); Bisby et Birch 1670 (SPN); Cole 49/22/8 (SPN); Kerr s.n. (SPN); Khattab et Maxted 1028 (SPN); Maxted 1006 (SPN); Maxted 1026 (SPN); Maxted 1027 (SPN); Maxted 1045 (SPN); Maxted 1051 (SPN); Maxted 1063 (SPN); Maxted 1124 (SPN); Maxted 1129 (SPN); Maxted 1131 (SPN); Maxted 1175 (SPN); Maxted 1175 (SPN); Maxted 1175 (SPN); Maxted, Bisby et Munyonyenbe 6577 (SPN); Maxted, Bisby et Munyonyenbe 6603 (SPN); Wilson 1009 (SPN); Krendl et Krendl s.n. (W); Velcev, Gancev, Bondev et Kocev 827 (W).

V. lutea subsp. *vestita*-Alexander et Kupicha 481 (BM); Balls 8733 (BM); Chelsea Physick 2599 (BM); Davis et Lamond 57256 (BM); Font Quer 377 (BM); Haussknecht 291 (BM); Sennen et Mauricio s.n. (BM); Boissier s.n. (E); Bourgeau 1855 (E); Davis 61741 (E); Davis et Bokhari 56495 (E); Fleischer s.n. (E); Liston 6421 (HUJ); Zohary 224424 (HUJ); Zohary 8/5/1931 (HUJ); Brown 408 (K); Brown s.n. (K); Davis et Bokhari 56495 (K); Guiton s.n. (K); Keller 246 (K); Radde 3/80 (K); Allkin 82/3 (SPN); Bisby, Nicholls et Grainger 1376 (SPN); Bisby, Nicholls et Polhill 10 (SPN); Maxted 1148 (SPN); Maxted 1232 (SPN); Maxted 1234 (SPN); Maxted, Allkin et Khattab 4260 (SPN); Maxted, Ehrman et Auricht 5318 (SPN); Maxted, Ehrman et Auricht 6166 (SPN); Maxted, Ehrman et Khattab 1795 (SPN); Maxted, Ehrman et Khattab 2740 (SPN); Maxted, Kitiki et Allkin 4100 (SPN); Maxted, Kitiki et Allkin 4125 (SPN); Maxted, Kitiki et Allkin 4174 (SPN); Maxted, Kitiki et Allkin 4188 (SPN); Maxted, Kitiki et Allkin 4197 (SPN); Maxted, Kitiki et Allkin 4200 (SPN); Maxted, Kitiki et Allkin 4310 (SPN); Maxted, Kitiki et Allkin 4329 (SPN); Maxted, Kitiki et Allkin 4339 (SPN); Krendl s.n. (W); Emmerikh 157 (WIR); Stankevich et Vlassov 496b (WIR); Stankevich et Vlassov 542 (WIR); Stankevich et Vlassov 770 (WIR).

V. melanops var. *melanops*-Rechinger 5865 (BM); Katz 1908 (E); Orphanides 3316 (E); Shibirg 695 (E); Fenzl 1835 (K); Maly s.n. (K); Rogers 639 (K); Bierbach s.n. (MPU); Costa-Reghini s.n. (MPU); Fluet 1873 (MPU); Guiol 6613 (MPU); Hudriczka 4/1876 (MPU); Le Brun s.n. (MPU); Virot s.n. (MPU); Sibthorp s.n. (OXF); Macfarlane 596 (SPN); Maxted 1098 (SPN); Maxted 1122 (SPN); Maxted, Kitiki et Allkin 4321 (SPN); Maxted, Kitiki et Allkin 4413 (SPN); Maxted, Kitiki et Allkin 4420 (SPN); Maxted, Kitiki et Allkin 4440 (SPN); Maxted, Kitiki et Allkin 4454 (SPN); Anon. 1022 (W); Burri et Krendl

s.n. (W); Caruel 5/1867 (W); Fenzl 1869 (W); Krendl et Krendl s.n. (W); Ronniger s.n. (W).

V. melanops var. *loiseaui*-Lavier 2162 (MPU); Maxted 1180 (SPN); Maxted 1236 (SPN); Maxted 1239 (SPN); Maxted 1256 (SPN); Maxted 1262 (SPN).

V. michauxii-Bornmuller 6682 (E); Davis et Hedge 28374 (E); Ekberg W 9116 (E); Hedge et Wendelbo W3638 (E); Hedge, Wendelbo et Ekberg W8276 (E); Koelz 14484 (E); Podlech 10364 (E); Gowan 2419 (K); Kotschy 238 (K); Willdenow s.n. (K); Aidarova s.n. (LE); Butkov s.n. (LE); Krivenko s.n. (LE); Linchevsky s.n. (LE); Lipsky s.n. (LE); Von Knorring s.n. (LE); Von Minkwitz s.n. (LE); Maxted et Potokina 8024 (SPN); Maxted et Potokina 8028 (SPN); Maxted et Potokina 8038 (SPN); Kotschy 238 (W); Kotschy 993 (W); Pichler s.n. (W); Portenchley 1366 (W); Gudkova s.n. (WIR); Nikitina s.n. (WIR); Popov 9419 (WIR); Shcherbakov s.n. (WIR); Stankevich 4588 (WIR); Stankevich D45 (WIR); Stankevich s.n. (WIR); Stankevich et Legotina 1504 (WIR); Stankevich et Legotina 1525 (WIR).

V. mollis-Davis et Hedge 27917 (BM); Davis et Hedge 28226 (BM); Davis 42889 (E); Davis et Hedge 27917 (E); Davis et Hedge 28226 (E); Jacobs 6501 (E); Haussknecht s.n. (G); Davis et Hedge 27917 (HUI); Eig et Zohary s.n. (HUI); Davis et Hedge 27696 (K); Sintenis 753 (K); Maxted, Auricht et Ehrman 4807 (SPN); Maxted, Auricht et Ehrman 4936 (SPN); Maxted, Auricht et Ehrman 5031 (SPN); Maxted, Auricht et Ehrman 5092 (SPN); Maxted, Auricht et Ehrman 5125 (SPN); Maxted, Auricht et Ehrman 5131 (SPN); Maxted, Auricht et Ehrman 5145 (SPN); Maxted, Auricht et Ehrman 5168 (SPN); Maxted, Auricht et Ehrman 5204 (SPN); Maxted, Auricht et Ehrman 5236 (SPN); Maxted, Auricht et Ehrman 5255 (SPN); Maxted, Ehrman et Auricht 4807 (SPN); Maxted, Ehrman et Khattab 2277 (SPN); Maxted, Ehrman et Khattab 2589 (SPN); Maxted, Ehrman et Khattab 2648 (SPN); Maxted, Ehrman et Khattab 2653 (SPN); Maxted, Ehrman et Khattab 2670 (SPN); Maxted, Ehrman et Khattab 2697 (SPN); Maxted, Ehrman et Khattab 2706 (SPN); Haussknecht s.n. (W).

V. narbonensis- Ayasse 5221 (BM); D'Alleizette 610 (BM); D'Alleizette s.n. (BM); Rahman 25903 (BM); Schneider 128 (BM); Sintenis 3661 (BM); Stamatiadou 14858 (BM); Bentham s.n. (E); Crawford 104 (E); Orphanides 1096 (E); Reverchon 951 (E); Rigo s.n. (E); Schimper 1832 (E); Sintenis 370 (E); Akverdov et Mirozoian s.n. (ERE); Oganezova et Oganessian s.n. (ERE); Pabot 744 (G); Sheinkar 101705 (HUI); Zohary 17869 (HUI); Zohary 87166 (HUI);

Baker 500-24 (K); Bentham s.n. (K); Britton 1017 (K); Durham 85 (K); Fiori 891 (K); Fleischer s.n. (K); Hausser s.n. (K); Lebert 1875 (K); Meikle 5003 (K); Meyers et Dinsmore 6845 (K); Miller 411 (K); Pichler s.n. (K); Turrill 84 (K); Williams 2213 (K); Beideman s.n. (LE); Fedchenko s.n. (LE); Gnezdillo s.n. (LE); Grossheim s.n. (LE); Gubanov s.n. (LE); Gubanov s.n. (LE); Ilyinskaya s.n. (LE); Klopotov s.n. (LE); Krashennikov s.n. (LE); Kristofovich s.n. (LE); Lipsky s.n. (LE); Litvinov s.n. (LE); Manakyan s.n. (LE); Manakyan s.n. (LE); Nikitina s.n. (LE); Popov s.n. (LE); Shiffers s.n. (LE); Talejev s.n. (LE); Ushkin s.n. (LE); Bernhardi s.n. (MO); Eggert s.n. (MO); Gandoger 423 (MO); Schneider 128 (MO); Sennen s.n. (MO); Stewart 3250 (MO); Alger 1839 (MPU); Anon. 2/5/1884 (MPU); Maudon s.n. (MPU); Prennet s.n. (MPU); Raphelis 1147 (MPU); Maxted, Auricht et Ehrman 4844 (SPN); Maxted, Auricht et Ehrman 4919 (SPN); Maxted, Auricht et Ehrman 5019 (SPN); Maxted, Auricht et Ehrman 5102 (SPN); Maxted, Auricht et Ehrman 5206 (SPN); Maxted, Auricht et Ehrman 5275 (SPN); Maxted, Auricht et Ehrman 5309 (SPN); Maxted, Bisby et Munyunenbe 6875 (SPN); Maxted, Bisby et Munyunenbe 7127 (SPN); Maxted et Chehadeh 6400 (SPN); Maxted et Chehadeh 6403 (SPN); Maxted et Chehadeh 6411 (SPN); Maxted et Chehadeh 6364 (SPN); Breckle 1149 (W); Dorfler 9 (W); Economides 1129 (W); Gauba 223 (W); Stankevich s.n. (WIR); Stankevich et Dorofeyev 2340 (WIR).

V. narbonensis var. *aegyptiaca*-Augustin s.n. (MPU); Khattab 159 (SPN); Khattab 167 (SPN); Khattab 173 (SPN); Khattab 62 (SPN); Macfarlane 615 (SPN); Maxted, Ehrman et Khattab 2649 (SPN).

V. narbonensis var. *affinis*-Dunn s.n. (BM); Drar 776 (CAIM); Tackholm s.n. (CAIM); Davis 42489 (E); Hauper s.n. (E); Hewer 3852 (E); Lamond 3044 (E); Lorch 1458 (HUJ); Zohary 1474 (HUJ); Alston et Sandwith 1756 (K); Atherton 907 (K); Bowles Scholarship Bot. Exp. 1043 (K); Davis 42489 (K); Davis et Hedge 28010 (K); Davis et Hedge 28800 (K); D'Angelis et Amdursky 542 (K); Muschler 27/4/1910 (K); Rawi, Nuri et Koas 28169 (K); Tengwall 392 (K); Deflers 388 (MPU); Maxted, Ehrman et Khattab 2038 (SPN); Maxted, Ehrman et Khattab 2142 (SPN); Maxted, Ehrman et Khattab 2172 (SPN); Maxted, Ehrman et Khattab 2402 (SPN); Maxted, Ehrman et Khattab 2544 (SPN); Maxted, Ehrman et Khattab 2562 (SPN); Maxted, Ehrman et Khattab 2583 (SPN); Maxted, Ehrman et Khattab 2590 (SPN); Maxted, Ehrman et Khattab 2689 (SPN); Maxted, Ehrman et Khattab 2698 (SPN); Maxted, Kitiki et Allkin 4123 (SPN); Maxted, Kitiki et Allkin 4288 (SPN).

V. narbonensis var. *jordanica*-Davis et Hedge 27762 (K); Economides 1129 (K); Furse 1932 (K); Hepper 3206 (K); KCR S/1113 (K); Lowne 1863-4 (K);

Paine s.n. (K); Postian 338 (K); Syngramides 1408 (K); VCR S/113 (K); Blanchet 5/1939 (MPU); Khattab 148 (SPN); Khattab 201 (SPN); Maxted, Ehrman et Khattab 2330 (SPN); Maxted, Ehrman et Khattab 2458 (SPN); Maxted, Ehrman et Khattab 2506 (SPN); Maxted, Ehrman et Khattab 3288 (SPN); Hopflinger 31/3/1953 (W).

V. narbonensis var. *narbonensis*-Guiol 1932 (BM); Muschler s.n. (K); Macfarlane 442 (SPN); Maxted, Ehrman et Khattab 1721 (SPN); Maxted, Ehrman et Khattab 2171 (SPN); Maxted, Ehrman et Khattab 2185 (SPN); Maxted, Ehrman et Khattab 2274 (SPN); Maxted, Ehrman et Khattab 2620 (SPN); Maxted, Ehrman et Khattab 2627 (SPN); Otto 31 (SPN).

V. narbonensis var. *salmonea*-Boulos s.n. (CAIM); Khattab 169 (CAIM); Simpson 608 (CAIM); Dinsmore 4928 (E); Dinsmore B845 (E); D'Angelis et Amdursky 542 (E); Rechinger 9077 (E); Wheeler Haines 1018 (E); Mouterde 6871 (G); D'Angelis et Amdursky 542 (HUI); Plitmann 1447 (HUI); Zohary 1448 (HUI); Zohary 1453 (HUI); Zohary 1466 (HUI); Zohary et D'Angelis 1467 (HUI); Zohary et D'Angelis 17868 (HUI); Al Rawi 20003 (K); Botany Staff 43354 (K); Dinsmore 10845 (K); Guest 1288 (K); Hepper 3235 (K); Janar 43354 (K); Omar et Hamid 36410 (K); Oswald 69 (K); Pankhurst 1288 (K); Rogers 592 (K); Shahevain 25127 (K); Simpson 53064 (K); Al-Eisawi 1310 (RNG); Maxted, Ehrman et Khattab 1728 (SPN); Maxted, Ehrman et Khattab 1748 (SPN); Maxted, Ehrman et Khattab 1985 (SPN); Maxted, Ehrman et Khattab 1985 (SPN); Maxted, Ehrman et Khattab 2039 (SPN); Maxted, Ehrman et Khattab 2043 (SPN); Maxted, Ehrman et Khattab 2125 (SPN); Maxted, Ehrman et Khattab 2156 (SPN); Maxted, Ehrman et Khattab 2170 (SPN); Maxted, Ehrman et Khattab 2457 (SPN); Maxted, Ehrman et Khattab 2520 (SPN); Maxted, Ehrman et Khattab 2569 (SPN); Maxted, Ehrman et Khattab 2569 (SPN); Maxted, Ehrman et Khattab 2583 (SPN); Maxted, Ehrman et Khattab 2612 (SPN); Maxted, Ehrman et Khattab 2654 (SPN); Maxted, Ehrman et Khattab 3289 (SPN); Maxted, Kitiki et Allkin 4709 (SPN); Maxted, Kitiki et Allkin 4710 (SPN); Handel-Mazzetti 275 (W); Haradjian 3277 (W); Kotschy 1394 (W).

V. noeana subsp. *megalodonta*-Davis 44942 (E); Davis et Hedge 28702 (E); Frodin 308 (W).

V. noeana subsp. *noeana*-Davis 21754 (BM); Haussknecht s.n. (BM); Sintenis 3660 (BM); Coode et Jones 2205 (E); Davis et Hedge 27746 (E); Ledingham, Ekim et Yutdakul 4362 (E); Polunin 5149 (E); Tarman et Elci 1956 (E); Kotschy s.n. (G); Zohary 87167 (HUI); Haussknecht s.n. (K); Kotte 251 (K); Macfarlane

473 (SPN); Maxted 1167 (SPN); Maxted 1168 (SPN); Maxted 1269 (SPN); Maxted et Chehadeh 6305 (SPN); Maxted, Ehrman et Auricht 5035 (SPN); Maxted, Ehrman et Auricht 5081 (SPN); Maxted, Ehrman et Auricht 5207 (SPN); Maxted, Ehrman et Auricht 5261 (SPN); Maxted, Ehrman et Auricht 5276 (SPN); Maxted, Ehrman et Auricht 5287 (SPN); Maxted, Ehrman et Auricht 5293 (SPN); Maxted, Ehrman et Auricht 5424 (SPN); Maxted, Ehrman et Khattab 2352 (SPN); Maxted, Ehrman et Khattab 2422 (SPN); Bornmuller et Bornmuller 14046 (W); Bozakman et Fitz 794 (W); Bozakman et Fitz 859 (W); Haradjian 1149 (W); Haussknecht s.n. (W); Kotschy 98 (W); Zohary 67102 (W).

V. oroboides-Ball s.n. (E); Kristof 4256 (E); Sabransky 4521 (E); Sabransky 77 (E); Fiori, Beguinot & Pampanini 303 (K); Gilliat-Smith 3089a (K); Gilliat-Smith 3089b (K); Grat 1860 (K); Prior 1041 (K); Smith s.n. (K); Jirus 1609 (MO); Babac 18 (SPN); Babac 56 (SPN); Macfarlane 12 (SPN); Maxted 1068 (SPN); Maxted 6526 (SPN); Maxted 6548 (SPN); Burri et Krendl s.n. (W); Burri et Krendl s.n. (W); Gilli s.n. (W); Polatschek s.n. (W); Sabransky 4521 (W); Wulfen s.n. (W).

V. pannonica-Barulina 6365 (WIR); Khinchuk 6461 (WIR); Khinchuk 6463 (WIR); Kiselyova 9940 (WIR); Stankevich 2392 (WIR); Stankevich et Dorofeyev 2401 (WIR); Stankevich et Dorofeyev 2402 (WIR); Stankevich et Dorofeyev 2413 (WIR); Voluznyova et Semyonova 43539 (WIR); Voluznyova et Semyonova 43541 (WIR); Zhilenko s.n. (WIR); Zhilenko s.n. (WIR).

V. pannonica subsp. *pannonica*-Gregoryan s.n. (BM); Parquet s.n. (BM); Davis et Coode 37084 (E); De Valon s.n. (E); Edmondson 231 (E); Lamond 3049 (E); Karapetyan et Aslanian s.n. (ERE); Anon. s.n. (LE); Popov s.n. (LE); Smirnova s.n. (LE); Bujorean 808 (MO); Andre 4/1879 (MPU); Edmondson 231 (RNG); Macfarlane 588 (SPN); Maxted 1179 (SPN); Maxted, Bisby et Munyunenbe 6602 (SPN); Maxted, Bisby et Munyunenbe 6639 (SPN); Maxted, Bisby et Munyunenbe 6856 (SPN); Maxted, Bisby et Munyunenbe 6868 (SPN); Karapetyan s.n. (W); Krendl s.n. (W); Krendl et Krendl s.n. (W); Polatschek s.n. (W); Ronniger s.n. (W); Seipka s.n. (W); Wittmer s.n. (W); Wittmer s.n. (W).

V. pannonica subsp. *striata*-Chelsea Physick 98 (BM); Edmondson et McClintock 2375 (E); Liendon 52 (E); Nannfeldt 6037 (E); Reverchon 741 (E); Smith et Glennie s.n. (E); Verdcourt 4660 (E); Arkhip s.n. (LE); Borissova s.n. (LE); Ganeshin s.n. (LE); Gelde s.n. (LE); Vankov s.n. (LE); Yarovaya s.n. (LE); Andre s.n. (MPU); Breton 16/7/1903 (MPU); Cartier 1182 (MPU); Cartier

1182b (MPU); Chevalier 1907 (MPU); Heribaud et Gasilide 2026 (MPU); Le Grand 3634 (MPU); Renaud 1150 (MPU); Gardner et Gardner 794 (RNG); Macfarlane 595 (SPN); Maxted 1075 (SPN); Maxted 1181 (SPN); Maxted 1238 (SPN); Maxted 1246 (SPN); Maxted 1250 (SPN); Maxted 1254 (SPN); Maxted 1255 (SPN); Maxted 1268 (SPN); Maxted, Ehrman et Khattab 1762 (SPN); Krendl et Krendl s.n. (W); Muck 27 (W).

V. peregrina-Sennen et Mauricio s.n. (BM); Davis 2235 (E); Heldreich 24/3/1895 (E); Kupicha 197 (E); Popov 271 (E); Thompson 1869 (E); Anon. s.n. (ERE); Gabrielian s.n. (ERE); Baldinger 17966 (HUJ); Jaffe 17962 (HUJ); Plitmann 17854 (HUJ); Zohary et Orshan 2718 (HUJ); Bourgeau 979 (K); Reverchon s.n. (K); Smith s.n. (K); Bochantsev 128 (LE); Lipsky s.n. (LE); Mikhelson s.n. (LE); Popov 271 (LE); Regel s.n. (LE); Yarmolenko 65 (LE); Gandoger s.n. (MO); Popov 271 (MO); Albaille s.n. (MPU); Blanchet s.n. (MPU); Blanchet s.n. (MPU); Foures 983 (MPU); Saurage 5863 (MPU); Maxted et Khattab 1033 (SPN); Maxted et Khattab 1042 (SPN); Maxted, Auricht et Ehrman 4833 (SPN); Maxted, Auricht et Ehrman 4950 (SPN); Maxted, Auricht et Ehrman 5022 (SPN); Maxted, Auricht et Ehrman 5068 (SPN); Maxted, Auricht et Ehrman 5120 (SPN); Maxted, Auricht et Ehrman 5166 (SPN); Maxted, Auricht et Ehrman 5240 (SPN); Maxted, Auricht et Ehrman 5268 (SPN); Maxted, Bisby et Munyunenbe 6582 (SPN); Maxted, Bisby et Munyunenbe 6640 (SPN); Maxted, Bisby et Munyunenbe 6792 (SPN); Maxted, Bisby et Munyunenbe 6819 (SPN); Maxted, Bisby et Munyunenbe 6859 (SPN); Maxted, Bisby et Munyunenbe 6906 (SPN); Maxted et Chehadeh 6366 (SPN); Maxted, Ehrman et Auricht 5205 (SPN); Maxted, Ehrman et Khattab 2031 (SPN); Maxted, Ehrman et Khattab 2095 (SPN); Maxted, Ehrman et Khattab 2147 (SPN); Maxted, Ehrman et Khattab 2164 (SPN); Maxted, Ehrman et Khattab 2370 (SPN); Maxted, Ehrman et Khattab 2460 (SPN); Maxted, Ehrman et Khattab 2503 (SPN); Maxted, Ehrman et Khattab 2559 (SPN); Maxted, Ehrman et Khattab 2607 (SPN); Maxted, Ehrman et Khattab 2652 (SPN); Maxted, Ehrman et Khattab 2735 (SPN); Maxted, Kitiki et Allkin 4001 (SPN); Maxted, Kitiki et Allkin 4029 (SPN); Maxted, Kitiki et Allkin 4045 (SPN); Maxted, Kitiki et Allkin 4053 (SPN); Maxted, Kitiki et Allkin 4137 (SPN); Maxted, Kitiki et Allkin 4150 (SPN); Maxted, Kitiki et Allkin 4294 (SPN); Burri et Krendl s.n. (W); Krendl et Krendl s.n. (W); Krendl et Krendl s.n. (W).

V. pyrenaica-Charpin et Jacquemond 15565 (E); Dresser P/428 (E); Endrefs s.n. (E); Smythies 120 (E); Brummitt 12835 (K); Wolfe 1854 (K); Boissier 7/1837 (MO); Bordere 6/7 (MO); Bourgeau 263 (MO); Bordere 464 (OXF); Bourgeau 10/07/1854 (OXF); Franqueville 28/06/1849 (OXF); Huter s.n.

(OXF); Neyraut 00/07/1902 (OXF); Warburg 17/08/1954 (OXF); Coultas, Lester et Longton 281 (RNG); Gardner et Gardner 829 (RNG); Sequra Zubizarreta 16968 (RNG); Adey 82/4 (SPN); Allkin 82/20 (SPN); Birch et Babac 20 (SPN); Macfarlane 571 (SPN); Boissier s.n. (W); Krendl 1315 (W); Polatschek s.n. (W); Schultz 464 (W); Spitzenberger 232 (W).

V. qatmensis-Maxted et Chehadeh 6412 (SPN); Maxted et Chehadeh 6406 (SPN); Maxted, Ehrman et Khattab 2061 (SPN); Maxted, Ehrman et Khattab 2066 (SPN); Maxted, Ehrman et Khattab 2081 (SPN); Maxted, Ehrman et Khattab 2732 (SPN); Maxted, Ehrman et Khattab 3210 (SPN).

V. sativa subsp. *amphicarpa*-Guiol 1825 (BM); Norris s.n. (BM); Ascherson 159 (E); Bourgeau 1729 (E); Coode et Jones 1005 (E); Coode et Jones 1041 (E); Davis et Bokhari 56392 (E); Koelz 14633 (E); Post s.n. (E); Zohary 1817 (HUJ); Townsend 72/74 (K); Junge s.n. (LE); Maxted, Auricht et Ehrman 4815 (SPN); Maxted, Auricht et Ehrman 4830 (SPN); Maxted, Auricht et Ehrman 4893 (SPN); Maxted, Auricht et Ehrman 5003 (SPN); Maxted, Auricht et Ehrman 5127 (SPN); Maxted, Auricht et Ehrman 5146 (SPN); Maxted, Ehrman et Khattab 1718 (SPN); Maxted, Ehrman et Khattab 1741 (SPN); Maxted, Ehrman et Khattab 2111 (SPN); Maxted, Ehrman et Khattab 2119 (SPN); Maxted, Ehrman et Khattab 2149 (SPN); Maxted, Ehrman et Khattab 2159 (SPN); Maxted, Ehrman et Khattab 2208 (SPN); Maxted, Ehrman et Khattab 2223 (SPN); Maxted, Ehrman et Khattab 2229 (SPN); Maxted, Ehrman et Khattab 2256 (SPN); Maxted, Ehrman et Khattab 2305 (SPN); Maxted, Ehrman et Khattab 2356 (SPN); Maxted, Ehrman et Khattab 2399 (SPN); Maxted, Ehrman et Khattab 2408 (SPN); Maxted, Ehrman et Khattab 2431 (SPN); Maxted, Ehrman et Khattab 2454 (SPN); Maxted, Ehrman et Khattab 2613 (SPN); Maxted, Ehrman et Khattab 2629 (SPN); Maxted, Ehrman et Khattab 2640 (SPN); Maxted, Ehrman et Khattab 2658 (SPN); Maxted, Ehrman et Khattab 2685 (SPN); Maxted, Ehrman et Khattab 2700 (SPN); Maxted, Ehrman et Khattab 2716 (SPN); Gmelin 662 (W); Krendl 27/3/1972 (W).

V. sativa subsp. *devia*-Press et Short 305 (BM); Anon. s.n. (MADM); Anon. s.n. (MADM); Anon. s.n. (MADM).

V. sativa subsp. *incisa*-Davies 33183 (E); Anon. s.n. (LE); Anon. s.n. (LE); Bieberstein s.n. (LE); Junge s.n. (LE); Stankov s.n. (LE); Utkin s.n. (LE); Macfarlane 549 (SPN); Macfarlane 600 (SPN); Maxted 1172 (SPN); Maxted 1267 (SPN); Maxted, Kitiki et Allkin 4414 (SPN).

V. sativa subsp. *macrocarpa*-Davis et Sutton 65916 (E); Masson s.n. (E); Maxted 1096 (SPN); Maxted 1117 (SPN); Maxted 1173 (SPN); Maxted 1270 (SPN); Maxted, Kitiki et Allkin 4469 (SPN); Maxted, Kitiki et Allkin 4495 (SPN); Tadaro s.n. (W); Witting s.n. (W).

V. sativa subsp. *nigra*-Clayton 738 (BM); Goncalves 3092 (BM); Hinton 2456 (BM); Macoun s.n. (BM); Mexia 7854 (BM); Peck s.n. (BM); Press et Short 71 (BM); Reed s.n. (BM); Siehe 139 (BM); Siehe 86 (BM); Khattab 932 (CAI); Simpson 4486 (CAI); Chrttek, Kosinova et Slavikova s.n. (CAIM); Larsen, Larsen et Jeppesen 183 (CAIM); Romee 492 (CAIM); Tackholm s.n. (CAIM); Albert 1658 (E); Anon. 292 (E); Anon. s.n. (E); Bisset 1042 (E); Davis 2217 (E); Davis 42961 (E); Davis et Hedge 26714 (E); Dinsmore 1163 (E); Elliott s.n. (E); Gathorne-Hardy 646 (E); Helbaek 2620 (E); Johnston s.n. (E); Johnston s.n. (E); Kearsney 535 (E); Kupicha 268 (E); Kupicha 303 (E); Lindsay s.n. (E); Morrison s.n. (E); Morrison s.n. (E); Ohashi s.n. (E); Polunin 5127 (E); Reverchon 21/5/1890 (E); Reverchon 497 (E); Reverchon 501 (E); Reverchon s.n. (E); Reverchon s.n. (E); Untchj 53 (E); Khanjan s.n. (ERE); Yamulkigjanyan et Karjyan s.n. (ERE); Danin s.n. (HUJ); Plitmann 21 (HUJ); Stainton 8250 (HUJ); Zohary s.n. (HUJ); Zohary s.n. (HUJ); Bor 215 (K); Furse 7313 (K); Lowne 1863/64 (K); Tengwall 703 (K); Thurston s.n. (K); Jauzia s.n. (LE); Edmonds et Price s.n. (MEXU); Ertter, Ahart et Strachan 3275 (MEXU); Fryxell 2966 (MEXU); Bernhardt s.n. (MO); Calder et Taylor 35348 (MO); Carter-Cook 499 (MO); Croat 52701 (MO); De Wilde 10836 (MO); Dougan s.n. (MO); Ewan 17562 (MO); Hatschbach 22280 (MO); Holdridge 876 (MO); Krapovickas et Vanni 36866 (MO); Maas Geesteranus 6110 (MO); Schallert 236 (MO); Shulman 268098 (MO); Stanford 1329 (MO); Taylor 1391 (MO); Allkin 82/3 (SPN); Allkin 82/5 (SPN); Allkin 83/4 (SPN); Allkin 83/4 (SPN); Allkin 83/43 (SPN); Bisby 1471 (SPN); Bisby 1702 (SPN); Bisby 1867 (SPN); Bisby 1934 (SPN); Bisby 1942 (SPN); Bisby 1962 (SPN); Bisby et Berkta 1397 (SPN); Bisby et Birch 1656 (SPN); Hensler s.n. (SPN); Hensler s.n. (SPN); J.A.F. et J.V.P. s.n. (SPN); Kerr 136 (SPN); Kerr s.n. (SPN); Larsen, Larsen et Jeppesen 183 (SPN); Maxted 1004 (SPN); Maxted 1014 (SPN); Maxted 1038 (SPN); Maxted 1065 (SPN); Maxted 1120 (SPN); Maxted 1151 (SPN); Maxted 1158 (SPN); Maxted 1165 (SPN); Maxted et Khattab 1016 (SPN); Maxted et Khattab 1030 (SPN); Maxted, Auricht et Ehrman 4911 (SPN); Maxted, Auricht et Ehrman 5062 (SPN); Maxted, Auricht et Ehrman 5288 (SPN); Maxted, Auricht et Ehrman 5306 (SPN); Maxted, Auricht et Ehrman 5396 (SPN); Maxted et Chehadeh 6310 (SPN); Maxted et Chehadeh 6331 (SPN); Maxted et Chehadeh 6346 (SPN); Maxted et Chehadeh 6402 (SPN); Maxted et Chehadeh 6405 (SPN); Maxted et Chehadeh 6410 (SPN); Maxted, Ehrman et Khattab 1778 (SPN); Maxted, Ehrman et Khattab 1836 (SPN); Maxted, Ehrman et Khattab 2047

(SPN); Maxted, Ehrman et Khattab 2105 (SPN); Maxted, Ehrman et Khattab 2213 (SPN); Maxted, Ehrman et Khattab 2473 (SPN); Maxted, Hollis et Goyder 1133 (SPN); Maxted, Hollis et Goyder 1188 (SPN); Maxted, Khattab et Bisby 1037 (SPN); Maxted, Kitiki et Allkin 4031 (SPN); Maxted, Kitiki et Allkin 4115 (SPN); Maxted, Kitiki et Allkin 4153 (SPN); Maxted, Kitiki et Allkin 4428 (SPN); Maxted, Kitiki et Allkin 4499 (SPN); Nielsen 414 (SPN); Otto 64 (SPN); Portes 2/6/1929 (SPN); Portman 844 (SPN); Puttick 49/22/10 (SPN); Puttick s.n. (SPN); Wallace 6817 (SPN); Watson s.n. (SPN); Whitmore 49/22/10 (SPN); Whitmore s.n. (SPN); Anon. 2/5 (W); Burri et Krendl s.n. (W); Crompton et Sell 67/227 (W); Demaree 47320 (W); Engelhardt 32 (W); Felix s.n. (W); Fitz et Spitzenberger 94 (W); Krawiecowa 510 (W); Krendl s.n. (W); Krendl et Krendl s.n. (W); Leute 2139 (W); Polatschek s.n. (W); Reverchon 497 (W); Ronniger s.n. (W).

V. sativa subsp. *sativa*-Brenchley s.n. (BM); Davis et Polunin 25934 (BM); Malinvaud 186 (BM); Postian 152 (BM); Thesiger 650 (BM); Sa'ad et Khattab s.n. (CAI); Boulos s.n. (CAIM); Collenette 3477 (E); Davis et Lightowlers 66705 (E); Kupicha 159 (E); Reverchon s.n. (E); Rix et al 1571 (E); Stribruy s.n. (E); Zohary et Plitmann 822413 (HUJ); Zohary, Plitmann et Baum s.n. (HUJ); Maitland s.n. (K); Alexander et Kupicha 77 (MO); Bangerter 5132 (MO); Boulos 2526 (MO); Churchill s.n. (MO); Dahlstrand 248 (MO); Gregg 654 (MO); Lewalie 8716 (MO); Mexia 7854 (MO); Padilla 1038 (MO); White s.n. (MO); Miller, Russell et Sutton 300 (RNG); Allkin 82/7 (SPN); Anon. MG-106166 (SPN); Bisby 1811 (SPN); Bisby 1851 (SPN); Bisby 1868 (SPN); Bisby 1905 (SPN); Bisby 1965 (SPN); Bisby 1982 (SPN); Maxted 1162 (SPN); Maxted 1196 (SPN); Maxted, Auricht et Ehrman 4822 (SPN); Maxted, Auricht et Ehrman 4846 (SPN); Maxted, Auricht et Ehrman 4924 (SPN); Maxted, Auricht et Ehrman 4963 (SPN); Maxted, Auricht et Ehrman 5042 (SPN); Maxted, Auricht et Ehrman 5107 (SPN); Maxted, Auricht et Ehrman 5178 (SPN); Maxted, Auricht et Ehrman 5211 (SPN); Maxted, Auricht et Ehrman 5277 (SPN); Maxted, Auricht et Ehrman 5321 (SPN); Maxted et Chehadeh 6311 (SPN); Maxted et Chehadeh 6332 (SPN); Maxted et Chehadeh 6347 (SPN); Maxted et Chehadeh 6384 (SPN); Maxted, Ehrman et Khattab 2385 (SPN); Maxted, Ehrman et Khattab 2395 (SPN); Maxted, Ehrman et Khattab 2625 (SPN); Maxted, Ehrman et Khattab 2727 (SPN); Maxted, Hollis et Goyder 1135 (SPN); Maxted, Kitiki et Allkin 4193 (SPN); Maxted, Kitiki et Allkin 4337 (SPN); Maxted, Kitiki et Allkin 4380 (SPN); Maxted, Kitiki et Allkin 4494 (SPN); Maxted, Kitiki et Allkin 4702 (SPN); Terasaki 5/1906 (SPN); Krendl et Burri s.n. (W).

V. sepium-Barrs et Portman 1035 (SPN); Maxted 1193 (SPN); Maxted, Bisby

et Munyunenbe 6515 (SPN); Maxted, Bisby et Munyunenbe 6526 (SPN); Maxted, Bisby et Munyunenbe 6611 (SPN); Maxted, Bisby et Munyunenbe 6624 (SPN); Maxted, Bisby et Munyunenbe 6680 (SPN); Maxted, Bisby et Munyunenbe 6686 (SPN); Maxted, Bisby et Munyunenbe 6725 (SPN); Maxted, Bisby et Munyunenbe 6760 (SPN); Maxted, Bisby et Munyunenbe 6782 (SPN); Maxted, Bisby et Munyunenbe 6833 (SPN); Maxted, Bisby et Munyunenbe 6925 (SPN); Maxted, Bisby et Munyunenbe 6965 (SPN); Maxted, Bisby et Munyunenbe 6970 (SPN); Maxted, Bisby et Munyunenbe 7044 (SPN); Maxted, Bisby et Munyunenbe 7138 (SPN); Maxted, Bisby et Munyunenbe 7217 (SPN); Maxted, Bisby et Munyunenbe 7630 (SPN).

V. sepium var. *ericalyx*-Gaetting 782 (E); Smith 4383 (E); Britton 4080 (K); Lester-Garland s.n. (K); Lewis 11 (K); Lowne 399 (K); Marsden-Jones & Turrill s.n. (K); Ross-Craig et Sealy 1681 (K); Ross-Craig et Sealy 1706 (K); Churchill s.n. (MO); Allkin 82/15 (SPN); Allkin 82/29 (SPN); Allkin 83/44 (SPN); Allkin 84/45 (SPN); Anon. s.n. (SPN); Bisby 1710 (SPN); Goyder 1302 (SPN); Hopkin 17 (SPN); Hopkin 66 (SPN); Jeppesen et Holm-Nielsen 608 (SPN); Maxted 1089 (SPN); Maxted 1090 (SPN); Maxted 1184 (SPN); Portman 20 (SPN); Whitmore 981 (SPN); Wiesbaur s.n. (W).

V. sepium var. *montana*-Davis 46327 (E); Davis et Hedge 30132 (E); Julio s.n. (E); Nyarady et Bujorean 805 (K); Nyarady et Bujorean 805 (MO); Anon. s.n. (SPN); Goyder 1305 (SPN); Jokela s.n. (W); Krendl s.n. (W).

V. sepium var. *sepium*-Popov et Chandjan s.n. (BM); De Wolf s.n. (E); Hiroe 69 (E); Popov et Chandjan s.n. (E); Campbell 162 (K); Davis 33059 (K); Schneider et Bergmann 766 (K); Alexeyenko s.n. (LE); Busch s.n. (LE); Busch et Busch s.n. (LE); Busch et Busch s.n. (LE); Dmitriyeva s.n. (LE); Dzevanovsky s.n. (LE); Endaurova s.n. (LE); Gabrielian s.n. (LE); Gordyagin s.n. (LE); Grigryev s.n. (LE); Krylov s.n. (LE); Mulkijanyan s.n. (LE); Pastukhov s.n. (LE); Savich s.n. (LE); Shiffers s.n. (LE); Steup s.n. (LE); Zedelmeyer s.n. (LE); Zedelmeyer s.n. (LE); Kittredge s.n. (MO); Allkin 83/95 (SPN); Drury 3 (SPN); Portman 39 (SPN); Jift 284 (W); Ronniger s.n. (W).

V. sericocarpa-Davis et Polunin 25858 (BM); Coode et Jones 1000 (E); Davis 19421 (E); Davis 42869 (E); Davis 42933 (E); Davis 5947A (E); Davis et Hedge 27711 (E); Davis et Polunin 25858 (E); Davis et Polunin 25994 (E); Furse 2135 (E); Meyers et Dinsmore 904b (E); Haussknecht s.n. (G); Zohary et Plitmann 114/55 (HUJ); Davis et Dodds 19421 (K); Haussknecht 20/3/1865 (K); Kotschy 71 (K); Kotschy 99 (K); Rawi, Nuri et Koas 28874 (K); Townsend 640422/14 (K); Maxted, Ehrman et Auricht 4926 (SPN); Maxted, Ehrman et

Auricht 5012 (SPN); Maxted, Ehrman et Auricht 5162 (SPN); Maxted, Ehrman et Auricht 5298 (SPN); Maxted, Ehrman et Khattab 1897 (SPN); Maxted, Ehrman et Khattab 1996 (SPN); Maxted, Ehrman et Khattab 2196 (SPN); Maxted, Ehrman et Khattab 2262 (SPN); Maxted, Ehrman et Khattab 2316 (SPN); Maxted, Ehrman et Khattab 2470 (SPN); Maxted, Ehrman et Khattab 2602 (SPN); Maxted, Ehrman et Khattab 2683 (SPN); Maxted, Ehrman et Khattab 2713 (SPN); Maxted, Ehrman et Khattab 3165 (SPN); Maxted, Kitiki et Allkin 4038 (SPN); Maxted, Kitiki et Allkin 4152 (SPN); Maxted, Kitiki et Allkin 4693 (SPN); Maxted, Kitiki et Allkin 4700 (SPN); Bozakman et Fitz 567 (W); Haradjian 417 (W); Haussknecht s.n. (W); Kotschy 151 (W).

V. serratifolia-Adamson s.n. (BM); Alston et Sandwith 567 (BM); Bramwell s.n. (BM); Chelsea Physick 97 (BM); Ciocirlan 100 (BM); Cirtu 678 (BM); De Witte 17446 (BM); Deseglise s.n. (BM); Elias 63 (BM); Ferrari et Mattiolo 892 (BM); Guiol s.n. (BM); Hare 1918 (BM); Heard s.n. (BM); Hilton 690 (BM); Jacquin 1778 (BM); Oberneder 6809 (BM); Ramsbottom s.n. (BM); Saunders 1906 (BM); Schultz 48 (BM); Taveau 3737 (BM); Wilcox 690 (BM); Baenitz s.n. (E); Ferrari et Mattiolo 892 (E); G.B.N. s.n. (E); Hooker s.n. (E); Sinclair 1596 (E); Stribrny s.n. (E); Tauscher 877 (E); Zohary et Plitmann 14446 (E); Alston et Sandwith 567 (K); Anon. 7/1895 (K); Bilimek s.n. (K); Degen s.n. (K); Dinsmore 13090 (K); Drenen 1050 (K); Drenen 1050 (K); Duffort s.n. (K); Godra s.n. (K); Grubb 170 (K); Morresay 16/5/1936 (K); Mosserary 16/5/1936 (K); Prudhomme 1692 (K); Simpson 467 (K); Tauscher s.n. (K); Townsend 640422/21 (K); Anon. s.n. (LE); Ispolaton s.n. (LE); Marusyak s.n. (LE); Voronova s.n. (LE); Yalovaya s.n. (LE); Baenitz s.n. (MO); Bernhardi s.n. (MO); Gandoger s.n. (MO); Schur s.n. (MO); Sennen s.n. (MO); Sommares s.n. (MO); Tauscher s.n. (MO); De Bechebrune et Savalier 1050 (MPU); D'Alleizette s.n. (MPU); Fages 627 (MPU); Guillon 22/5/1898 (MPU); Lambert 443 (MPU); Le Grand 735 (MPU); Massot s.n. (MPU); Massot s.n. (MPU); Ozanon 818 (MPU); Reverchon 368 (MPU); Tauscher 48 (MPU); Tauscher s.n. (MPU); Tenone 1829 (MPU); Al-Eisawi 1311 (RNG); Bisby 2019 (SPN); Khattab 119 (SPN); Khattab 120 (SPN); Khattab 121 (SPN); Khattab 137 (SPN); Khattab 155 (SPN); Khattab 156 (SPN); Khattab 217 (SPN); Khattab 33 (SPN); Khattab 57 (SPN); Khattab 93 (SPN); Maxted, Ehrman et Khattab 2561 (SPN); Anon. s.n. (W); Burri et Krendl s.n. (W); Furth s.n. (W); Halepa s.n. (W); Hopflinger s.n. (W); Krendl s.n. (W); Krendl s.n. (W); Leute 762 (W); Poutauschlay 44 (W); Serres s.n. (W); Tauscher 48 (W); Khinchuk s.n. (WIR); Leokene 66/7-350 (WIR); Leokene s.n. (WIR); Muratova 6379 (WIR); Muratova 6380 (WIR); Teplyakova et Seferova 500365 (WIR).

V. tigridis-Mouterde 11387 (G); Maxted, Ehrman et Khattab 3287 (SPN).

ISO code	Taxon codes														
	010	020	030	040	050	060	070	080	090	150	160	170	180	190	
ITA	-	-	-	-	-	17	-	-	-	-	-	-	-	-	
JOR	-	-	-	-	-	-	-	-	-	-	-	1	-	-	
JPN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
KEN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LBN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LBY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MAR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MRT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MUS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MEX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
NLD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
NOR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
NPL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
NZL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHL	-	-	-	-	-	1	-	-	-	-	-	-	-	-	
PAK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
POL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PRT	-	-	-	-	-	1	-	-	-	-	-	-	-	-	
ROM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SAU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SWE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SOM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SUN	-	23	-	57	-	16	27	-	-	-	-	-	-	-	
SYR	-	6	-	-	-	-	8	-	20	1	4	-	-	-	
TUN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TUR	19	7	19	9	-	5	3	34	-	4	-	14	-	-	
UGA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
USA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
YUG	-	-	-	-	-	4	-	-	-	-	-	-	-	-	

ISO code	Taxon codes													
	200	210	220	230	240	250	260	270	280	290	310	320	330	340
AFG	-	1	4	1	-	-	-	-	-	-	-	-	-	-
ALB	-	-	-	-	-	1	-	-	-	-	1	-	-	-
ARG	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AUT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AUS	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BEL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BGR	-	-	-	3	-	-	-	1	-	1	-	-	1	-

ISO code	Taxon codes													
	200	210	220	230	240	250	260	270	280	290	310	320	330	340
BRA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CAN	-	-	-	-	-	-	-	1	-	-	-	-	-	-
CHE	-	-	-	1	-	-	-	-	-	-	-	-	-	-
CHL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHN	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CSK	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CUB	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CYP	-	1	-	1	-	-	-	1	-	-	-	-	-	-
DEU	-	-	-	1	-	-	-	2	-	-	-	-	-	-
DNK	-	-	-	-	-	-	-	2	-	-	-	-	-	-
DZA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ECU	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EGY	-	-	-	-	-	-	-	-	-	-	1	-	-	-
ESP	-	-	-	2	-	-	-	-	-	6	5	-	-	-
ETH	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FIN	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRA	-	9	-	-	-	-	-	5	-	9	-	-	2	1
GBR	-	-	-	-	-	-	-	2	1	2	4	-	-	-
IRN	-	-	6	1	-	1	3	-	-	-	2	-	-	-
ISL	-	2	-	-	-	-	-	-	-	-	-	-	-	-
ITA	-	2	-	4	-	-	4	1	-	-	-	-	6	1
JOR	-	2	-	-	-	-	-	-	-	-	-	-	-	-
JPN	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KEN	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LBN	-	1	-	-	-	-	-	-	-	-	-	-	-	-
LBY	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAR	-	-	-	-	-	-	-	-	-	1	3	-	-	-
MRT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MUS	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MEX	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NLD	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NOR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NPL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NZL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PAK	-	-	-	1	-	-	-	-	-	-	-	-	-	-
POL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PRT	-	-	-	-	-	-	-	3	-	7	1	-	-	-
ROM	-	-	-	1	-	-	-	2	-	-	-	-	1	-

ISO code	Taxon codes													
	350	360	370	380	390	400	410	420	430	440	450	460	470	480
GRC	-	-	2	-	-	-	-	-	-	-	-	-	-	-
HUN	-	-	-	-	-	-	-	-	-	-	-	-	-	1
IRL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ISR	-	-	3	-	2	1	-	7	-	-	-	-	-	-
IND	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IRQ	1	1	-	-	1	-	-	9	-	1	-	-	-	-
IRN	4	1	1	-	3	1	-	-	-	-	-	-	-	1
ISL	-	-	-	-	-	-	-	6	-	-	-	-	-	-
ITA	-	-	2	-	-	1	-	-	-	-	-	2	-	-
JOR	-	-	-	-	1	4	-	2	-	-	-	-	-	-
JPN	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KEN	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LBN	-	-	1	-	-	-	-	-	-	-	-	-	-	-
LBY	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MRT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MUS	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MEX	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NLD	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NOR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NPL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NZL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PAK	-	-	2	-	-	-	-	-	-	-	-	-	-	-
POL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PRT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROM	-	-	-	-	-	-	-	-	-	-	-	-	-	2
SAU	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWE	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SOM	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SUN	20	-	25	-	-	-	-	-	-	-	-	-	12	8
SYR	-	9	4	1	10	5	6	20	-	4	-	-	-	-
TUN	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TUR	1	20	12	-	7	1	-	3	-	23	3	-	-	2
UGA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
USA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YUG	-	-	5	-	-	-	-	-	-	-	-	8	-	2

ISO code	Taxon codes											
	650	660	670	680	690	700	710	720	730	740	750	760
CHN	-	-	-	-	-	-	-	-	-	-	-	-
CSK	-	-	-	-	-	1	-	-	-	-	-	-
CUB	-	-	-	-	-	-	-	-	-	-	-	-
CYP	-	-	-	-	-	-	-	-	-	-	-	-
DEU	1	-	-	-	-	1	-	-	-	-	-	-
DNK	-	-	-	-	-	1	-	-	-	-	-	-
DZA	-	-	-	-	-	-	-	-	-	-	-	-
ECU	-	-	-	-	-	-	-	-	-	-	-	-
EGY	-	-	-	-	-	-	-	-	-	-	-	-
ESP	-	-	-	-	-	-	-	-	-	-	-	-
ETH	-	-	-	-	-	-	-	-	-	-	-	-
FIN	-	-	-	-	-	1	-	-	-	-	1	-
GBR	-	-	-	-	-	12	-	-	-	-	-	-
GRC	-	-	-	-	-	-	-	-	3	3	2	6
HUN	-	-	-	-	-	-	-	-	-	-	-	3
IRL	-	-	-	-	-	4	-	-	-	-	-	-
ISR	-	-	-	-	-	-	-	-	-	-	-	-
IND	-	-	-	-	-	-	-	-	-	-	-	-
IRQ	-	-	-	-	-	-	-	-	-	-	-	-
IRN	-	-	-	-	-	-	-	-	-	-	-	-
ISL	-	-	-	-	-	-	-	-	-	-	-	-
ITA	-	-	-	-	-	-	-	-	-	-	4	2
JOR	-	-	-	-	-	-	-	-	-	-	-	-
JPN	-	-	-	-	-	-	-	-	-	-	-	-
KEN	-	-	-	-	-	-	-	-	-	-	-	-
LBN	-	-	-	-	-	-	-	-	-	-	-	-
MAR	-	-	-	-	-	-	-	-	-	-	-	-
MRT	-	-	-	-	-	-	-	-	-	-	-	-
MUS	-	-	-	-	-	-	-	-	-	-	-	-
MEX	-	-	-	-	-	-	-	-	-	-	-	-
NLD	-	-	-	-	-	-	-	-	-	-	-	-
NOR	-	-	-	-	-	1	-	-	-	-	-	-
NPL	-	-	-	-	-	-	-	-	-	-	-	-
NZL	-	-	-	-	-	-	-	-	-	-	-	-
PHL	-	-	-	-	-	-	-	-	-	-	-	-
PAK	-	-	-	-	-	-	-	-	-	-	-	-
POL	-	-	-	-	-	-	-	-	-	-	-	3
PRT	-	-	-	-	-	-	-	4	-	-	-	-

ISO code	Taxon codes											
	650	660	670	680	690	700	710	720	730	740	750	760
ROM	-	-	-	-	-	-	-	-	-	-	-	2
SAU	-	-	-	-	-	-	-	-	-	-	-	-
SWE	-	-	-	-	-	-	-	-	-	-	-	-
SOM	-	-	-	-	-	-	-	-	-	-	-	-
SUN	53	-	-	-	-	-	-	-	-	-	-	23
SYR	-	9	5	7	2	-	-	-	-	-	-	-
TUN	-	-	-	-	-	-	-	-	-	-	-	-
TUR	7	-	-	-	-	-	4	-	1	5	3	12
UGA	-	-	-	-	-	-	-	-	-	-	-	-
USA	-	-	-	-	-	1	-	-	-	-	-	6
YUG	5	-	-	-	-	-	-	-	-	1	-	6

APPENDIX V

Some institutes holding *Vicia* subgenus *Vicia ex situ* collections

Gene bank code	Gene bank name and address
ALB007	Forage Research Institute, Fushe-Kruja, Albania.
AUS006	South Australia Department of Agriculture, P.O. Box 1671, 25 Grenfell Street, Adelaide, South Australia.
BGR001	Institute of Introduction and Plant Genetic Resources, Sadovo, Plovdiv District, Bulgaria.
BRA010	National Research for Livestock, Campo Grande/MS C.C. 154, Rodovia Br 262, Brasil.
BRA021	Empresa Catarinense de Pesquisa Agropecuaria, Florianopolis - Santa Caterina C.C. D-20, Estr. Geral Itacorub, Brasil.
CSK003	Research Institute of Plant Production, Praha 6, Ruzyně Drnovska 507, Czechoslovakia.

- CSK090 Research and Breeding Institute of Technical Crops and Legumes, Sumperk - Temenice, Czechoslovakia.
- CSK091 Research and Breeding Institute for Fodder Plants, Troubsko, PBS, Ceske Budejovice Svamberk, Czechoslovakia.
- CYP001 Agricultural Research Institute, P.O. Box 2016, Nicosia, Cyprus.
- DEU001 Institut für Pflanzenbau und Pflanzenzucht, Braunschweig Bundesallee 50, Germany.
- DEU146 Institut für Genetik und Kulturpflanzenforschung, Corrensstrasse 3, Gatersleben, Germany.
- ESP002 Instituto Nacional de Investigaciones Agrarias, Jose Abascal 56, Madrid, Spain.
- ESP004 Centro de Conservacion de Recursos Fitogeneticos (INIA), Alcala de Henares, Madrid, Apartado de Correos 1045, Spain.
- ESP007 CSIC, Estacion Experimental de "Aula Dei", Zaragoza Apartado 202, Montanana 177, Spain.
- ESP011 Ramon Batlle Vernis, S.A., Bell-Lloch (Lerida) Carretera Nacional 11, s/n, Spain.
- ESP020 Centro Reg. de Invest. Agron. de Andalucia, Est. de Cult. de Los Gran., Sevilla, Avda, Borbolla 1, Spain.
- ETH013 International Livestock Centre for Africa, P.O. Box 5689, Addis Ababa, Ethiopia.
- FRA043 INRA - Station de Genetique et d'Amelioration des Plantes, Dijon Cedex B.P. 1540, France.
- FRA051 INRA - Domaine Pluridisciplinaire de Magneraud, P.O. Box 52, Surgeres, France.
- GBR001 Viciae Database Project, Department of Biology, Medical and Biological Sciences Building, University of Southampton,

- Southampton SO9 3TU, United Kingdom.
- GBR004 Royal Botanic Gardens, Wakehurst Place, Ardingly, Haywards Heath RH17 6TH, United Kingdom.
- GRC005 Greek Gene Bank, North Greece Agricultural Research Centre, P.O. Box 10514, Thessaloniki, Greece.
- GRC006 Fodder Crops and Pastures Institute, Theophrastu St., Larissa, Greece.
- HUN002 Research Institute for Vegetable Crops, Ujmajor / Budapest Park u. 2 Pf. 95, Hungary.
- JPN003 Department of Genetic Resources, National Institute of Agrobiological Resources, Tsukuba-gun, Ibaraki-ken 305, 1-1 Kannondai, Japan.
- PRT005 Genetics Department, Estacao Agronomica Nacional, Oeiras Quinta do Marques, Portugal.
- ROM007 Suceava Gene Bank, Agriculture Research station, Boulevardu 1 Mai, Nr. 17, Suceava, Judetul Suceava, Romania.
- SUN001 N.I. Vavilov All-Union Scientific Research Institute of Plant Industry (VIR), 42-44 Herzen Street, St. Peterberg, Russia.
- SWE002 Nordic Gene Bank, P.O. Box 41, Alnarp, Sweden.
- SYR003 Genetic Resources Unit-Scientific Agriculture Research Directorate, P.O. Box 133, Douma, Damascus, Syria.
- USA005 National Seed Storage Laboratory USDA-ARS, Colorado State University, Fort Collins, Colorado 80523, USA.
- USA022 Western Regional Plant Introduction Station USDA-ARS, Washington State University, Johnson Hall, Pullman, WA 99164-6402, USA.
- ZAF001 Division of Plant and Seed Control, Department of Agricultural and Technical Services, Private Bag X179, Pretoria, South Africa.

8. INDEX TO TAXA

	Taxon code	Page nos.
Sect. <i>Atossa</i>	-	20
Sect. <i>Bithynicae</i>	-	71
Sect. <i>Faba</i>	-	84
Sect. <i>Hypechusa</i>	-	29
Sect. <i>Microcarinae</i>	-	28
Sect. <i>Narbonensis</i>	-	72
Sect. <i>Peregrinae</i>	-	49
Sect. <i>Vicia</i>	-	58
Sect. <i>Wiggersia</i>	-	54
Ser. <i>Atossa</i>	-	26
Ser. <i>Grandiflorae</i>	-	65
Ser. <i>Hypechusa</i>	-	39
Ser. <i>Hyrcaicae</i>	-	32
Ser. <i>Narbonensis</i>	-	75
Ser. <i>Pseudovicilla</i>	-	21
Ser. <i>Rhombocarpae</i>	-	74
Ser. <i>Truncatulae</i>	-	23
Ser. <i>Vicia</i>	-	59
<i>V. abbreviata</i>	650	26
<i>V. aintabensis</i>	010	52
<i>V. anatolica</i>	020	40
<i>V. assyriaca</i>	030	32
<i>V. balansae</i>	040	24
<i>V. barbazitae</i>	050	65
var. <i>barbazitae</i>	750	65
var. <i>incisa</i>	730	65
<i>V. bithynica</i>	060	72
<i>V. ciliatula</i>	070	40
<i>V. cuspidata</i>	080	54
<i>V. dionysiensis</i>	670	29
<i>V. eristalioides</i>	710	74
<i>V. esdraelonensis</i>	090	33
<i>V. faba</i>	100	86
subsp. <i>faba</i>	-	86
var. <i>equina</i>	120	86
var. <i>faba</i>	110	86

<i>var. minor</i>	130	86
subsp. <i>paucijuga</i>	140	86
<i>V. galeata</i>	150	36
<i>V. galilaea</i>	160	77
<i>var. faboidea</i>	170	79
<i>var. galilaea</i>	180	79
<i>V. grandiflora</i>	190	69
<i>var. grandiflora</i>	760	69
<i>var. incisa</i>	740	71
<i>V. hyaeniscyamus</i>	200	83
<i>V. hybrida</i>	210	46
<i>V. hyrcanica</i>	220	37
<i>V. johannis</i>	230	77
<i>var. ecirrhosa</i>	240	77
<i>var. johannis</i>	250	77
<i>var. procumbens</i>	260	77
<i>V. kalakhensis</i>	660	76
<i>V. lathyroides</i>	270	57
<i>V. lutea</i>	280	47
subsp. <i>lutea</i>	290	49
subsp. <i>vestita</i>	310	49
<i>V. melanops</i>	320	39
<i>var. loiseaui</i>	340	40
<i>var. melanops</i>	330	39
<i>V. michauxii</i>	350	50
<i>V. mollis</i>	360	43
<i>V. narbonensis</i>	370	81
<i>var. aegyptiaca</i>	380	83
<i>var. affinis</i>	390	83
<i>var. jordanica</i>	400	81
<i>var. narbonensis</i>	410	83
<i>var. salmonea</i>	420	81
<i>V. noeana</i>	430	38
subsp. <i>megalodonta</i>	450	38
subsp. <i>noeana</i>	440	38
<i>V. oroboides</i>	460	23
<i>V. pannonica</i>	470	45
subsp. <i>pannonica</i>	480	46
subsp. <i>striata</i>	490	46
<i>V. peregrina</i>	500	53
<i>V. pyrenaica</i>	510	59

<i>V. qatmensis</i>	680	65
<i>V. sativa</i>	520	60
subsp. <i>amphicarpa</i>	530	60
subsp. <i>devia</i>	720	64
subsp. <i>incisa</i>	550	64
subsp. <i>macrocarpa</i>	560	65
subsp. <i>nigra</i>	570	60
subsp. <i>sativa</i>	590	64
<i>V. sepium</i>	600	27
var. <i>ericalyx</i>	700	28
var. <i>montana</i>	620	28
var. <i>sepium</i>	610	28
<i>V. sericocarpa</i>	630	47
<i>V. serratifolia</i>	640	80
<i>V. tigridis</i>	690	33